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A NEW GERMICIDE FOR USE IN THE GENITO-URINARY TRACT: "MERCUROCHROME-220"

PRELIMINARY REPORT OF EXPERIMENTAL AND CLINICAL STUDIES *

HUGH H. YOUNG, M.D.

EDWIN C. WHITE, PH.D.

AND

ERNEST O. SWARTZ, M.D.

BALTIMORE

During the past two years the research work in the laboratories of the James Buchanan Brady Urological Institute has been given over largely to the study of antiseptics with a view particularly to the development of drugs applicable to the genito-urinary tract. Attention was first directed to internal antiseptics, since Hinman[1] had previously shown in our laboratories the questionable value of hexamethylenamin. Starting with the remarkable selective activity of the kidneys on phenolsulphonephthalein, as shown by the work of Abel and Rowntree[2] and developed as a functional test in our clinic, we tried to attach other chemical agents to phenolsulphonephthalein and thus produce an effective internal urinary antiseptic. Some interesting drugs were produced and studied by Davis and one of us (E. C. W.[3]). The war interrupted these studies, but the urgent need of really effective antiseptics for local use in the genito-urinary tract induced us later to concentrate on this problem. Browning was visited in London by one of us, and sufficient quantities of his flavines were obtained and sent to Baltimore. As a result of experiments and clinical use in this clinic, Davis and Harrell[4] recommended the use of acriflavine in the treatment of acute gonorrhea, and this form of therapy was then used with good results in certain venereal clinics of the American Expeditionary Forces.

Impressed with the possibilities of using dyes as a basis for the development of therapeutic compounds, we have concentrated our efforts on the production of new drugs possessing the penetrating qualities of dyes while at the same time being germicidal and relatively nontoxic and nonirritating. The number of compounds that have been and are being produced in the pursuit of this research is considerable. From among them the substance reported on in this paper has been selected for extended study. In mercurochrome-220 we have a drug of demonstrated germicidal value. The speed with which some old infections of the bladder and kidney pelvis have disappeared after its use is striking, and the absence of irritating and toxic qualities, together with the ability of the patient to retain a 1 per cent. solution for hours without discomfort, are sufficiently proved to establish the possibilities of the drug in these conditions. For the first time, we have a drug of great germicidal strength that can be tolerated in the human bladder for several hours, which establishes an ideal condition from the standpoint of its sterilizing effects.

Its value in colon and staphylococcus infections has led us to apply mercurochrome-220 to gonorrhea and chancroidal ulcerations, our investigations having been carried on under the grant recently made us by the Interdepartmental Social Hygiene Board for research in the prevention and treatment of venereal diseases. Our series of cases so far is limited, but the demonstration of the sterilizing value of the drug in the urethra, bladder and kidney pelvis is promising enough to warrant this early publication.

CONSIDERATIONS GOVERNING SYNTHESIS OF A NEW URINARY GERMICIDE

In synthesizing a drug for local use as a urinary antiseptic, it was sought to combine the following properties: (1) ready penetration of the tissues in which the infection exists; (2) lack of irritation of the drug to tissues; (3) high germicidal activity; (4) ready solubility in water and stability of the solution; (5) freedom from precipitation in urine, and (6) sufficiently low toxicity to avoid systemic effects from the small amount of the drug that may be absorbed.

In order to meet the first requirement it was decided to make use of a penetrating dye, not necessarily a germicide of itself, but serving merely as a carrier in which a germicidal chemical group could be substituted. The clinical experience that the basic dyes such as fuchsin, brilliant green, crystal violet, and, in some cases, the flavines, are too irritating to the mucosa of the urinary tract for general use suggested the use of acid dyes. This class of colors, which includes as its commoner representatives the phthaleins and most of the azo dyes, offers a wide range of choice. From purely chemical considerations it might be predicted that the basic dyes would be more irritating than the acid dyes. The former are salts of weak bases, and therefore their solution must have an acid reaction. The acid dyes, on the other hand, are used as sodium salts, and solutions of them necessarily have a neutral or slightly alkaline reaction, depending on whether the free dye is a strong acid, such as a sulphonic acid, or

* From the James Buchanan Brady Urological Institute, Johns Hopkins Hospital, with the aid of funds granted by the Interdepartmental Social Hygiene Board for research in the prevention and cure of venereal diseases.

1. Hinman, Frank: Urinary Antisepsis, J. A. M. A. **65**: 1769 (Nov. 20) 1915.
2. Abel and Rowntree: J. Pharmacol. & Exper. Therap. **1**: 231, 1909.
3. Davis and White: J. Urol. **2**: 107, 1918. Davis, White and Rosen: J. Urol. **2**: 277, 1918.
4. Davis and Harrell: J. Urol. **2**: 257 1918.

a weak acid, such as a phthalein. Since the tissues are generally more sensitive to acidity than to alkalinity, this reasoning led to the choice of an acid dye as the basis of the synthetic germicide.

The extensive use of eosin as a cytoplasmic stain at once suggested its use as a suitable dye of this class. However, it does not lend itself to chemical modification, because those positions in its molecule susceptible to substitution by other chemical groups are already occupied by bromin. On the other hand, it was found that the closely related substance dibromfluorescein could undergo substitution by the germicidal group we chose and still retain practically the same tinctorial properties that eosin itself possesses.

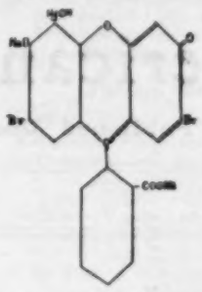
Mercury was chosen as the active germicidal principle to be substituted in the dye molecule. Virtually the only form in which this metal has heretofore been used in the urinary tract has been that of the chlorid or cyanid salts. The chlorid is so extremely irritating that only very dilute solutions (1:30,000) are tolerated, and it is extremely doubtful whether such solutions, especially in the presence of urine, exert much effect on the infection. Concerning the use of the cyanid there is little available information. In the case of either salt, however, the degree of penetrability is uncertain and in all probability is slight.

The irritating effect of solutions of mercuric chlorid is due to the mercury ion. If, however, the metal is substituted in an organic compound, such as an acid dye, the mercury no longer yields ions, but exists as a firmly bound part of the dye molecule itself. In this form of combination the properties of the metal as manifested by mercury salts are more or less completely masked. The new substance gives a negative reaction with the usual reagents for mercury, such as alkalis, iodids and alkali sulphids. The organic combinations of mercury also generally exhibit lower toxicity than do corresponding amounts of mercury in salt form, and frequently, but not always, their germicidal action is milder than that shown by the salts. With the great variety of possible combinations offered, depending on the nature of the organic substance used, it is not very difficult to find products whose advantages of nonirritability, lower toxicity and high penetrating power more than offset their somewhat decreased germicidal power as compared with that of the mercury salts.

Although a large amount of investigation of the therapeutics of the organic mercury compounds has been carried out in Europe, the study of these compounds in this country has, as far as we know, been limited to that of Davis, White and Rosen[3] and of Schamberg, Kolmer and Raiziss.[5] Most of the work abroad has dealt with the use of these substances in trypanosome infections. The principles we employ in the use of organic mercury compounds in the urinary tract we believe are new.

DESCRIPTION OF MERCUROCHROME-220

To the substance obtained by substituting one atom of mercury in the molecule of dibromfluorescein we have given the name "mercurochrome-220."[6] Chemically it is dibrom-oxymercuryfluorescein, or its sodium salt. The latter contains about 26 per cent. of mercury, and is represented by the formula:



The free acid is a red powder insoluble in water but readily soluble in sodium hydroxid solution, with the formation of a deep cherry red color, showing fluorescence on dilution. The dry salt forms iridescent green scales, slightly hydroscopic and readily soluble in water. The solution is stable and is not affected by moderate heat or exposure to the air. Strongly acid urine (p_H=5.0) gives a slight precipitate *of the free dye;* but if the acidity is p_H=6.4 or less, no precipitation occurs. There is entire freedom from precipitation when a 1 per cent. solution of the drug is mixed with an equal volume of medium rich in protein, such as hydrocele fluid. The solution stains the skin a bright red color, but the stain is readily removed by rubbing first with 2 per cent. potassium permanganate solution, and then with 2 per cent. oxalic acid solution.

It was found that under proper conditions a second atom of mercury could be introduced into the dye molecule. However, the substance thus formed showed no greater germicidal action than the simpler compound, and was consequently discarded.

It should be mentioned that a "mercury dibromfluorescein" has been experimented with by Hahn and Kostenbader.[7] These authors give no description of their drug, but its mercury content (35 per cent.) indicates that it differs from our substance and that it is not a homogeneous chemical compound.

PENETRATION

Attention must be paid to the penetrating power of any germicide for use in the urinary tract. Fenger[8] has shown that "in thirty-eight hours after inoculation the gonococci have only just begun to effect entrance between the epithelial cells. The inflammation extends until the gonococci have penetrated deep into the layers of the mucous membrane, which has become acutely congested, the epithelium undergoing mucous degeneration, and exfoliating in patches." MacCallum[9] states that "the gonococcus penetrates among the epithelial cells and extends even into the subepithelial tissues of the urethra." Sections made from cases of papillary cystitis and from pyelitis show the organisms to have penetrated to the deeper layers of the epithelial cells.

Attention was called by Davis and Harrell[4] to the rapid diffusibility of acriflavine in the tissues. During the administration of mercurochrome-220 by injection of solutions into a rabbit's ear vein to determine toxicity, the same phenomenon was observed. This compound spread rapidly from the vein into which it was being injected, and in a few seconds the entire ear

5. Schamberg, J. F.; Kolmer, J. A., and Raiziss, G. W.: A New and Superior Mercurial Germicide, J. A. M. A. **68**: 1458 (May 19) 1917. Schamberg, Kolmer, Raiziss and Trist: J. Infect. Dis. **24**: 547 (June) 1919.

6. The name "mercurochrome" will be applied generically to all the mercury-bearing dyes that we are investigating, the individual being distinguished by the laboratory number following the name. We have made a number of such compounds, including phthaleins, azo dyes, basic dyes, thiazins, etc., on which we shall report in due time.

7. Hahn and Kostenbader: Ztschr. f. Chemotherap., Orig., **2**: 71, 1914.

8. Fenger, quoted by Keyes: Modern Urology, **1**: 59.

9. MacCallum: Textbook of Pathology, p. 530.

was colored a reddish pink. This color persisted with varying intensity for from twenty-four to forty-eight hours.

With a view to determining the penetrability of this mercury-bearing dye, when used in the urinary tract, a series of direct experiments was carried out. A rabbit was catheterized, a soft rubber catheter being used. Through this catheter an ounce of 1 per cent. solution of the drug was slowly injected into the bladder, and the catheter was slowly withdrawn, allowing some of the fluid to escape through the urethra. At the end of five minutes the catheter was again introduced, and the bladder was emptied. The rabbit was quickly killed, and the bladder and urethra were dissected out intact. The bladder was then opened, and excess of solution was removed by washing with water. Frozen sections of the urethra and bladder were made immediately and were examined without the use of any other stain. In other instances the bladder and urethra were opened and immediately transferred to formaldehyd solution and hardened. Paraffin blocks were made and sections were cut without the use of any other stain. This experiment was carried out several times, the catheter being used in one instance, and in the other instances the bladder being filled through the urethra by means of a small syringe. The latter method was used to avoid any possible trauma to the urethral mucosa. In other rabbits under ether anesthesia, the abdomen was opened, the ureters were exposed, and by means of a small record syringe the ureter and kidney pelvis were gently filled with a 1 per cent. dye solution, care being taken to prevent overdistention of the kidney pelvis, and the ureter was ligated. After five minutes the rabbit was killed, the ligature was removed from the ureter, the kidney and the ureter were taken out intact, and frozen sections were made and promptly examined. In other instances, paraffin sections were made.

Examination of the frozen sections as well as of the paraffin sections shows that the epithelial cells of the urethra are stained a deep red. This staining is most intense in the superficial layers, and becomes less intense toward the submucosa; but the submucosa was stained in places, though not so uniformly as the epithelial layers. In some places the stain penetrated the submucosa into the muscularis. This mercury-bearing dye stains the epithelium of the anterior and posterior urethra uniformly, and to a less extent penetrates to the submucous layers. Sections of the bladder and the ureter show the same uniform penetration and staining of the cytoplasm of the epithelial cells, and the submucosa is less deeply stained. Sections of the kidney pelvis showed penetration and staining of the epithelium. The dye had also been taken up by the cells of the collecting tubules, and they were stained for a short distance up the tubules from the papillae. In the urethra, the epithelium of the glands opening into the urethra was stained for some distance from the mouths of the ducts.

TOXICITY

In determining the toxicity of the drug, various solutions were administered intravenously. The urine was examined and the phenolsulphonephthalein excretion was determined, and in dogs blood urea was determined before injection. We noticed a variation in the amount of the drug that rabbits and dogs could tolerate. Ten mg. per kilogram invariably killed rabbits in twenty-four hours, and no gross lesions were found at necropsy. Rabbits receiving 5 mg. per kilogram showed a decrease in phenolsulphonephthalein output and an albuminuria that lasted about a week. Dogs tolerated 10 mg. per kilogram very well with no evidence of discomfort or illness. In each instance there was produced an albuminuria without casts and a temporary reduction in phenolsulphonephthalein output but no rise in blood urea. The albuminuria persisted about five days. At no time were casts found. The phenolsulphonephthalein output returned to normal with the disappearance of the albuminuria. No evidence of kidney damage was found at necropsy on animals killed at the end of the experiments. With this toxic limit established no harm is to be expected from the small amount of the drug that may be absorbed when used locally in the genito-urinary tract.

IRRITATION

One per cent. solutions of mercurochrome-220 gave no evidence of irritating qualities when used in the conjunctival sac of rabbits. Solutions of this drug in strength from 0.1 to 5 per cent. have been used in the human genito-urinary tract as a local antiseptic. In the kidney pelvis a 1 per cent. solution was used. This was slowly injected through the ureteral catheter, the catheter was plugged, and the solution was retained for five minutes. There has been no sign of irritation or reaction following its use. This procedure has been carried out three times in one week in some instances. In the urethra a 5 per cent. solution caused only temporary burning when retained five minutes, and a number of cases of acute urethritis have been treated by the use of 1 per cent. solution injected four times a day, the solution being retained five minutes at each injection. There has been no irritation beyond occasional temporary smarting. No cases of retention have been seen, and no stricture formation has resulted from its use in our series of cases, as will be seen from the case reports.

In only two instances was there any complaint of burning or irritation. These were both chronic cystitis cases in old men with residual urine. One of them had extensive carcinoma of the prostate involving the bladder, with a residual urine of 200 c.c. He was on interval catheterization, and about 1 ounce of 1 per cent. mercurochrome was placed in the bladder and retained until the next catheterization, about six hours later. This man complained of severe burning in the bladder and had a reaction, which persisted for several days, after which his urine became much clearer but his infection persisted. The other case was similar, that of an old man with an enlarged prostate, his general condition being such as to make prostatectomy out of the question. There were several hundred cubic centimeters of residual urine. After several hours he complained of severe burning in the bladder, which persisted several days.

With the exception of the two cases noted, we have seen no irritation beyond occasional temporary smarting at the time of injection. The solution has been used in a number of bladder infections with small amounts of residual urine without irritation. The fact that irritation has been seen so rarely indicates that its occurrence in these cases is due to some individual hypersensitiveness rather than to any inherent property of the drug. Some observers who have been using

it have reported not only absence of irritation but also a prompt cessation of pain following the use of the drug in infected bladders and kidney pelves.

BACTERIOLOGIC TECHNIC

The medium chosen in which to test the germicidal action of drugs intended for use in the urinary tract was urine. We are aware that the objection may be raised that many infections have their seat in an environment more closely related to serum than to urine, and that serum therefore represents the most rational medium for test tube experiments. How far this contention really applies to infection of the urinary tract may well be questioned, especially in such infections as may be located not much deeper than the epithelial layers. Moreover, no set of test-tube experiments can be relied on for much more than a rough comparative evaluation of various germicides, which will bear no necessary relation to relative efficiency in clinical tests. For this reason urine seemed a medium fairly well representing clinical conditions. It had the further advantage that the results obtained with it take into account any precipitation or other chemical change that the drug may undergo under conditions of actual clinical application in the urinary tract.

The tests were carried out after this manner: Urine was voided aseptically into sterile flasks, and adjusted to the reaction of 6.4 on the hydrogen-ion scale. Blank tests were made to insure sterility. Nine c.c. of this urine were inoculated with a 3 mm. loopful of a twenty-four hour broth culture of the organism. To the inoculated urine was added 1 c.c. of an aqueous solution of the drug ten times as strong as was desired in urine dilution. Thus, 9 c.c. of urine plus 1 c.c. of the 1:100 drug solution gave a final dilution of 1:1,000 in urine. The mixture was at once well shaken, and at the end of the desired time period 0.1 c.c. of the mixture was transferred with a sterile capillary pipet to 10 c.c. of agar, and this mixture was immediately plated. The advantage of adding the drug to inoculated medium rather than to inoculate medium already containing the drug has been forcibly pointed out by Dakin and Dunham.[10] The former procedure simulates that carried out in an actual disinfection, and has the advantage that, in case the drug is altered in any way by the medium, it at least gets an equal chance to act on the organisms as well as be acted on by the medium.

In making tests with final dilutions that are low (for example, 1:100), it must be remembered that a considerable concentration of the drug may be present in the agar plate. Thus, if 0.1 c.c. of a 1:100 solution in urine be transferred to 10 c.c. of agar, we shall have a new hundredfold dilution; that is, the dilution in agar will be 1:10,000. Since the agar plate is incubated at least twenty-four hours, we have in effect action of a 1:10,000 solution on the organism for twenty-four hours rather than action of a 1:100 solution for whatever time period we may choose in our test. The results thus obtained are obviously erroneous, and in order to avoid them, this expedient was adopted: After the low dilution (1:100) had acted on the inoculated urine for the stipulated time, 0.1 c.c. was mixed with 2 c.c. of sterile water, and 0.1 c.c. of this new dilution was plated with 10 c.c. of agar. The dilution in agar was then 1:200,000, a dilution which separate experiments showed was without action on the organisms even in twenty-four hours. Blank experiments with this double dilution showed that when no drug was present, enough organisms were left to give a good growth in agar plates.

The composition of urine from the same individual varies considerably, and of course variable results were obtained. In every case three or more tests were made, and the figures given in the tables represent the highest dilution that always gave a sterile plate. In all cases an average of results would be more favorable to the drug, but we feel that the method of report we have adopted is safer and less open to criticism than an average would be.

In testing the germicidal value of the flavines, the precaution must be taken to read the plates after forty-eight hours as well as after twenty-four hours. We have frequently found that a flavine plate would apparently be sterile at the end of the first period and would show a growth of many colonies at the end of the second period. No such delayed growth was observed in tests with mercurochrome-220. This emphasizes the fact that the value of the flavines lies in their antiseptic action rather than in their germicidal action.

It should be mentioned that the notable difference between the action in acid and in alkaline urine shown by acriflavine is not shown by mercurochrome-220. The action shown by this compound in alkaline urine was slightly inferior to that shown in slightly acid urine.

COMMENT ON BACTERIOLOGIC TESTS

The outstanding fact observed on comparing the germicidal values of mercurochrome-220, acriflavine, protargol and argyrol (Tables 1, 2, 3, 4 and 5) is the *rapidity* of action of the mercury compound in fairly high dilutions. In one minute it kills *B. coli* or *Staphylococcus aureus* in a dilution of about 1:1,000, a result obtained with none of the other drugs even in one hour. In fifteen minutes its effect is nearly as great as in twenty-four hours, killing *B. coli* in this short time at 1:5,000, and *Staphylococcus aureus* at 1:10,000. A few tests were made to learn the minimal time in which a 1:100 solution would sterilize. *Staphylococcus aureus* was killed almost instantaneously; that is, as rapidly as we could introduce the drug, withdraw a sample, dilute in water (to dilute the drug out of action in the agar) and plate. *This procedure took no longer than ten seconds.* The same test on *B. coli* revealed that a few organisms remained after ten seconds' exposure to the drug. Since a 1:800 solution kills this organism in one minute, the time necessary for a 1:100 solution to kill is possibly no more than thirty seconds.

Acriflavine is shown to be much less potent as a germicide in even the most concentrated solutions, if allowed to act on the organisms for one hour or less. It surpasses mercurochrome-220 in the twenty-four hour test, at this time period appearing to be about four times as effective as the mercury compound. It is hardly logical to judge a local urinary germicide by its action on organisms during such a long period of time; a short period of exposure in the test, on the other hand, approximates clinical conditions. If *rapid* disinfection is a desideratum, as it appears to be, mercurochrome-220 is superior to acriflavine.

Comparison of mercurochrome-220 with the silver protein compounds is open to two interpretations. If we consider the action in the test tube of those solu-

10. Dakin and Dunham: Brit. M. J. 2:641 (Nov. 17) 1917.

tions used clinically—10 per cent. argyrol and 1 per cent. protargol—the silver compounds compare favorably with the mercury dye except in the action of protargol on *Staphylococcus aureus*. If, on the other hand, we consider the action of solutions of the same concentration of these three substances, we find that the silver compounds are in no wise comparable with mercurochrome-220. Since most of the urinary infections penetrate more or less deeply into the mucosa, therapeutic results will probably be controlled by the concentration of the germicide that finds its way into the tissues. It therefore appears that our comparison should take into account *the effective concentration* of the various drugs, rather than the concentrations applied to the surface of the infected area. The latter concentrations may not, and in the case of a nonpenetrating substance, like argyrol or protargol, probably do not, represent the relative concentrations of the germicide actually reaching the seat of the infection.

TABLE 1.—THE GERMICIDAL STRENGTH OF MERCUROCHROME-220 IN URINE*

Medium	Organism	Time Exposed to Drug	Highest Dilution Killing Uniformly
Urine ($p_H = 6.4$)	B. coli	1 minute	1 : 800
	S. aureus	1 minute	1 : 1,000
	B. coli	5 minutes	1 : 1,000
	S. aureus	5 minutes	1 : 5,000
	B. coli	15 minutes	1 : 5,000
	S. aureus	15 minutes	1 : 10,000
	B. coli	1 hour	1 : 5,000
	S. aureus	1 hour	1 : 10,000
	B. coli	24 hours	1 : 20,000
	S. aureus	24 hours	1 : 20,000
Hydrocele fluid	B. coli	1 hour	1 : 1,000
	S. aureus	1 hour	1 : 1,000
	B. coli	24 hours	1 : 4,000
	S. aureus	24 hours	1 : 4,000

* The test consisted in treating 9 c.c. of sterile urine with 1 c.c. of drug solution ten times as strong as desired in final urine dilution. One-tenth c.c. portions were placed in agar at the end of stipulated periods.

TABLE 2.—THE GERMICIDAL STRENGTH OF ACRIFLAVINE IN URINE*

Medium	Organism	Time Exposed to Drug Action	Highest Dilution Killing Uniformly
Urine $p_H = 6.4$	B. coli	1 hour	1 : 100
	Staph. aureus	1 hour	1 : 200
Urine $p_H = 7.6$	B. coli	1 hour	1 : 200
	Staph. aureus	1 hour	1 : 400
Urine $p_H = 6.4$	B. coli	24 hours	1 : 10,000
	Staph. aureus	24 hours	1 : 60,000
Urine $p_H = 7.6$	B. coli	24 hours	1 : 70,000
	Staph. aureus	24 hours	1 : 80,000

* No exposure for less than one hour was made because of the weak germicidal action for the one hour period.

For this reason a comparison of *absolute* concentrations (Table 5) seems a reasonable one, in view of the superior penetrating power of mercurochrome-220, and such a comparison shows a superiority of the mercury dye over the silver proteins. Thus, whereas both argyrol and protargol at 1:1,000 fail to kill either *B. coli* or *Staphylococcus aureus* in one hour, the same concentration of the mercury dye kills both organisms in about one minute.

METHODS EMPLOYED IN THE CLINICAL USE OF MERCUROCHROME-220

In the treatment of infections of the kidney pelvis, the following procedure was employed: Ureteral catheterization was done and a separate collection was made from each kidney. This was centrifuged, and a stained smear was made and examined microscopically. After the collection was completed, the kidney pelvis was gently filled, the gravity method being used in some instances and the syringe in others, with a 1 per cent. solution of mercurochrome-220, the catheter being plugged and the fluid retained in the pelvis for five minutes. There has been no complaint of pain and no severe reaction in any of our cases. This procedure was repeated twice a week, and when the urine from each kidney was free from pus and organisms for a week, the patient was discharged to return for further observation in a month.

In treatment of bladder conditions, the urethra was first irrigated with sterile water, a coudé catheter was passed, and the bladder was washed clean. One ounce of 1 per cent. mercurochrome-220 was then injected into the bladder through the catheter by pressure from a bulb syringe, or by a Keyes syringe. The patient was instructed to retain this solution for at least one hour, and longer if possible. Some patients have been able to retain the solution for more than three hours. This procedure was carried out twice a day, as a rule, and in some instances three times a day. There was occasionally some slight burning and smarting, which lasted only a short time. Several complained of smarting of short duration after three or four treatments, but not at first. The urine voided by the patient on arising in the morning was centrifuged. A stained smear was made and examined. After three or four treatments, the urine usually began to clear up, and as soon as it was free from organisms, the number of treatments per day was gradually reduced. It was noticed that as long as mercurochrome-220 was used in the bladder, the urine remained hazy owing to the presence of exfoliated epithelial cells, and not of pus and organisms.

TABLE 3.—GERMICIDAL STRENGTH OF ARGYROL, 10 PER CENT. SOLUTION, IN URINE

Time of Exposure	Organism	Result
5 minutes	B. coli	No growth
5 minutes	S. aureus	No growth
15 minutes	B. coli	No growth
15 minutes	S. aureus	No growth
1 hour	B. coli	No growth
1 hour	S. aureus	No growth

TABLE 4.—GERMICIDAL STRENGTH OF PROTARGOL, 1 PER CENT. SOLUTION, IN URINE

Time of Exposure	Organism	Result
5 minutes	B. coli	No growth
5 minutes	S. aureus	Growth
15 minutes	B. coli	No growth
15 minutes	S. aureus	Growth
1 hour	B. coli	No growth
1 hour	S. aureus	Growth

TABLE 5.—GERMICIDAL STRENGTH OF ARGYROL AND PROTARGOL IN URINE, $p_H = 6.4$

Drug	Organism	Time of Exposure	Highest Dilution Killing the Organism
Protargol	B. coli	1 hour	1 : 1,000 failed
	S. aureus	1 hour	1 : 1,000 failed
	B. coli	24 hours	1 : 2,000
	S. aureus	24 hours	1 : 2,000
Argyrol	B. coli	1 hour	1 : 1,000 failed
	S. aureus	1 hour	1 : 1,000 failed
	B. coli	25 hours	1 : 1,000 failed
	S. aureus	24 hours	1 : 1,000 failed

An abstract of ten cases treated in this clinic is included herewith.

REPORT OF CASES

CASE 1 (F-32830, J. H. H. D., Dr. Wesson).—*Urethral stricture, periurethral abscess, cystitis and posterior urethritis.*

—A white man, aged 54, came in complaining of inability to void urine. The family history was negative. The patient denied previous venereal disease. Four years before, the patient was admitted to the Johns Hopkins Hospital with a diagnosis of perineal abscess and urethral stricture. During his stay of one month in the hospital, the abscess was opened and the stricture was thoroughly dilated. During the interval the patient had no trouble. On his return there was a large swelling in the perineum, and the patient voided with great difficulty. Filiforms and followers up to 24 F. were passed, and a coudé catheter was then introduced, through which 500 c.c. of foul-smelling, sanguinopurulent urine was withdrawn. The patient was placed on daily bladder irrigations of a potassium permanganate solution (1:6,000) and at the end of five days the urine was still cloudy and infected with both bacilli and cocci. Irrigation of a warm solution of mercurochrome-220 (1:1,000) were then given daily. Following the irrigation, 1 ounce of 1 per cent. mercurochrome-220 was placed in the bladder and the patient was instructed to retain this for at least one hour. The infection immediately began to clear up, and at the end of five days the urine was clear and entirely free from pus and organisms, and remained so until his discharge from the clinic four weeks later. The patient is still under observation, returning for weekly dilatations of the stricture. The patient was able to retain the 1 per cent. mercurochrome-220 solution for more than two hours in the bladder without any discomfort.

Case 2 (7298, B. U. I.).—*Subacute cystitis with chronic seminal vesiculitis.*—A white man, aged 20, came in complaining of the presence of pus in the urine. The family and venereal histories were negative. The patient stated that for the past three years he had had intervals of bladder irritability associated with the passage of cloudy urine. The past history was otherwise negative. Examination of the urine disclosed the presence of a bacillus infection and a large amount of pus. Ureteral catheterization repeated several times revealed that the kidneys were free from infection, and no acid-fast organisms were ever found. The patient received treatment at irregular intervals at the Brady Clinic for six months, receiving prostatic massage, seminal vesicle stripping, irrigations with potassium permanganate solutions (1:1,000), and instillations of solutions of acriflavine (1:1,000). Flavine solutions were used twice a week for two months without clearing up the infection. Instillations of from one-half to 1 ounce of 1 per cent. solution of mercurochrome-220 were then begun, given on alternate days. The urine began to clear immediately, and after the sixth treatment was found to be free from pus and organisms. The urine was examined at weekly intervals for a month, and no infection was found at any time. The patient had no difficulty in retaining the solutions in the bladder for from one to three hours. The patient returned, after a month's absence, with cloudy urine, which was found to be due to phosphates and was free from infection and pus.

Case 3 (7775, B. U. I.).—*Cystitis.*—A white man, aged 54, came in complaining of kidney trouble. The family and venereal history were negative. He gave a history of a severe left-sided renal colic twenty years previously. He had had no recurrence or symptoms until six months before, but had had about a dozen attacks in the past six months. On admission his bladder urine was cloudy, owing to a small amount of pus and a bacillus infection. The duration of this infection was indefinite. On cystoscopy there was no residual urine, and the bladder capacity was 250 c.c. The bladder was trabeculated, and a small median bar with a pouch behind it existed. The kidneys were negative and no stone was found in either the ureter or the kidney by wax tip, plain roentgen ray or pyelogram. The treatment consisted of daily instillations of one-half ounce of 1 per cent. mercurochrome-220 through a posterior urethral instillator into the empty bladder, the patient retaining the solution for at least an hour and for longer periods if possible. After the first injection, the urine became clearer, but pus cells and organisms persisted until the fourth treatment. After this the urine contained a few desquamated epithelial cells, but no organisms were found at any time. The urine was studied twice during the week following the discontinuance of treatments and was found free from infection both times, and also on discharge at the end of this time.

Case 4 (6607, B. U. I.).—*Bilateral pyelitis and cystitis.*—A white man, aged 58, came in complaining of soreness in the left kidney region. This was the patient's third admission to the hospital. On his first admission he had a perineal prostatectomy, convalescence from which was satisfactory except for a complicating epididymitis, and a febrile reaction associated with a pain in the lumbar region, probably due to a pyelitis. The patient improved markedly after leaving the hospital, and was well up to five weeks previous to his second admission. At this time he noticed that the urine was cloudy and highly colored. Three weeks previous to this he had had a second febrile reaction associated with pains in the kidneys. Ureteral catheterization disclosed a bacillary infection of both kidney pelves. The patient was treated by pelvic lavage, silver nitrate solutions being used and his infection entirely cleared up, so that on his discharge he had no pus or organisms in the urine. At this time he developed an acute epididymitis, which prolonged his convalescence. Four months later he returned to the hospital the third time, and a diagnosis of bilateral pyelitis and papillary cystitis due to a bacillus was made. The pyelitis was treated by pelvic lavage, 1 per cent. mercurochrome-220 solutions being used. The pelvis was gently filled with the solution until the patient became conscious of a sense of distention; the catheter was then withdrawn, leaving the pelvis filled. This was done once a week, and on alternate days the bladder was treated. From one-half to 1 ounce of a 1 per cent. mercurochrome-220 solution was used, being injected into the empty bladder and retained for an hour or more. It required ten treatments to render the urine pus-free and organism-free. The patient's urine was free from pus and infection on discharge after one month's treatment.

Case 5 (7498, B. U. I.).—*Prostatic bar obstruction; Cystitis and bilateral pyelitis.*—A white man complained of pain across the pubic region on admission. The family history was negative except for the death of one brother from tuberculosis. He admitted a gonorrheal infection twenty years previously with no complications or recurrences. He dated his trouble to a severe attack of influenza about one year before. On his first admission to the hospital, studies made then led to the diagnosis of cystitis, median bar obstruction, bilateral pyelitis due to a bacillus infection, and a right-sided hydronephrosis of moderate grade. Previous to his admission the patient had been treated in another hospital for seven weeks by pelvic lavages, autogenous vaccines and bladder irrigations, but the infection persisted.

On his second admission a punch operation was done. When convalescent, ureteral catheterization was performed, and the urine from both kidneys was found infected with bacilli, there being only a few pus cells present. Each pelvis was filled by gravity with a 1 per cent. mercurochrome-220 solution, and the catheter was withdrawn. Examination of the urine obtained by ureteral catheterization on the first and third days following this one treatment failed to reveal any pus or organism. The patient left the city immediately after this last examination, but at a later date is to report for observation.

Case 6 (E, outside case).—*Cystitis.*—A white man, aged 35, came in for an examination because of cloudy urine. The family and personal history were negative. The patient's urine was found to contain a small amount of pus and many bacilli. No definite history as to the length of time the infection had existed could be obtained. The kidneys were negative on ureteral catheterization. No pathologic condition was found in the bladder except signs of a chronic cystitis due to long-standing infection. Daily instillations of one-half ounce of 1 per cent. mercurochrome-220 were carried out, and on the fourth day the urine was found to be free from infection and pus, and remained clear until the patient left the clinic.

Case 7 (7728, B. U. I.).—*Prostatic bar; cystitis.*—A white man, aged 53, came in complaining of prostate trouble. The family and personal histories were negative except for two

gonorrheal infections without complications. On admission the patient had a few cocci in his bladder urine but no pus cells. Cystoscopy revealed a prostate bar, and a punch operation was done and a retention catheter was left in place for forty-eight hours. On the removal of the catheter the urine was found to contain a large amount of pus, many bacilli and no cocci. The patient was treated by instillations of from one-half to 1 ounce of 1 per cent. mercurochrome-220. These treatments were preceded by irrigation of the anterior urethra; a coudé catheter was then passed, and the bladder was irrigated with sterile water. Instillations were given twice a day, and the solution was retained for at least an hour without any pain or burning. After the first day the urine became clearer, and after seven instillations (the morning of the fourth day) the urine was found to be free from organisms. Daily examination of the first urine voided in the morning failed to detect any infection during his subsequent stay of one week at the clinic.

CASE 8 (4364, B. U. I.).—*Chronic cystitis.*—A white man, aged 68, came back for observation. The patient had had a perineal prostatectomy four years previously, and had secured an excellent result; but a bladder infection persisted. Examination of the urine revealed a large amount of pus and many bacilli. The urethra was thoroughly irrigated with sterile water; a coudé catheter was passed; the bladder was washed clean with sterile water, and 1 ounce of 1 per cent. mercurochrome-220 was injected through the catheter into the bladder. This was done twice a day. Daily examination of the urine was made. The morning urine the third day (after five treatments) was found to be free from organisms, but contained many epithelial cells. The urine was examined each day during the rest of his stay at the clinic (three days), and no organisms were found at any time. There was no irritation or burning when the solution was retained in the bladder from two to three hours.

CASE 9 (7732, B. U. I.).—*Chronic cystitis.*—A white man, aged 53, complained of kidney trouble. The family and personal histories were negative. For the past three years the patient had had a pain in the right lumbar region at times. This was never severe, but rather of the dull aching character. Five months before admission, the patient began to have hematuria and renal colic on the right side. Ureteral catheterization revealed a coccus infection on the right side and no infection on the left side. A pyelogram was made and a diagnosis of right hypernephroma made. Nephrectomy was performed. Following this the bladder infection persisted. The patient was then given bladder instillations of one-half ounce of 1 per cent. mercurochrome-220 on alternate days to be retained for one hour. There was an immediate reduction in the number of pus cells and organisms. After the seventh treatment the urine was found to be free from infection and remained so for two weeks. In this time the urine was carefully examined four times, but no infection was found.

CASE 10 (7857, B. U. I.).—*Cystitis.*—A white man, aged 50, had complained of urinary difficulty for the past six years. The family and personal histories were negative except for two gonorrheal infections, the last one being six years previously, from which time the patient dated his urinary trouble. Examination detected a tight stricture in the membranous urethra and a contracted vesical orifice. A punch operation was done under local anesthesia, and a retention catheter was left in the bladder for drainage for forty-eight hours. The patient developed a mixed infection of the bladder, both bacilli and cocci together with a large amount of pus being found in the urine. After the removal of the tube, daily instillations of 1 per cent. mercurochrome-220, preceded by irrigations of sterile water, were begun. The urine was examined daily. There was a gradual diminution in the number of organisms and the amount of pus. There were no organisms found on the fifth day, a very few on the sixth and none afterward up to the twelfth day of the treatment.

RESULTS IN URETHRITIS

The bacteriologic tests of the action of mercurochrome-220 on the gonococcus have not been completed as yet and will be published later.

In fifty-one cases of acute specific urethritis, treatment has been given by intra-urethral injections of 1 per cent. solutions of this drug. These were all public dispensary cases, and a large number of the patients were negroes, many of whom failed to cooperate, while others failed to continue their treatment after the discharge began to diminish, especially if they had no complication to cause them pain or annoyance. In none of these cases have we seen any irritation beyond a temporary burning or smarting, whether the drug was used in the anterior or in the posterior urethra.

The method used in these cases has been: microscopic diagnosis as to the presence or absence of gonococcus; the three glass test to determine the part of the urethra involved and the extent of involvement, and an examination of the prostate and the vesicles on the first visit. We did not examine the urethra with a bougie à boule, owing to the presence of an acute discharge. An anterior urethral irrigation of warm sterile water or dilute (1:10,000) potassium permanganate solution was then given. This was followed by the careful injection into the anterior urethra of sufficient 1 per cent. mercurochrome-220 solution to fill completely the anterior urethra, the patient compressing the lips of the meatus and retaining the solution for five minutes. If the posterior urethra was involved, the solution was gently forced into the posterior urethra by means of a bulb syringe, and was retained in the bladder for an hour or more. A small quantity of the drug solution and a blunt nosed urethral syringe were dispensed, and the patient was instructed to inject the solution four times a day immediately after urinating, retaining it for five minutes. On return to the clinic, smears were examined microscopically, and as the organisms lessened in number, the number of injections was reduced to three and then to two and later to one per day. The reduction should be gradual. As long as the drug is used the urine will remain cloudy owing to exfoliated epithelial cells, which will be found stained pink, while the polymorphonuclear cells will not be stained by this drug.

We were able to follow thirty cases until an apparent cure was effected. This involved in some cases the treatment of preexisting or consequent prostatitis, vesiculitis or stricture. In such cases a cure was considered accomplished when the urethral discharge had disappeared and the urine remained free from shreds for two weeks. It was found very difficult to secure the cooperation of this class of patients, in the treatment of residual prostatitis, when all urethral and urinary signs had disappeared.

Twenty-one other patients were improved and discontinued treatment. The average length of time required to render the discharge free from gonococci was ten days. The shortest time required to accomplish this was three days. These were acute cases, two of which remained free from further infection, but in one case there was a recurrence of organisms after nineteen days, due to a reinfection from the prostate. The longest time required to render any case gonococcus-free was seventeen days. This was an acute exacerbation of a chronic infection, with involvement of the posterior urethra and the prostate.

Recurrence of organisms took place in six cases, or 20 per cent. of our total. Two of these six were cases in which the anterior urethra alone was involved, and the recurrence was probably due to stopping the injections before the entire canal had been sterilized.

Four of these recurrences were in cases having both anterior and posterior involvement. Epididymitis developed in two of these cases, and in one case strictures were found subsequently in the bulbous urethra.

The anterior urethra alone was involved in eighteen cases, or 60 per cent. of our series, there being anterior and posterior involvement in twelve cases, or 40 per cent., at the time the patients first presented themselves for treatment. Chronic prostatitis was found to be present in fifteen cases, or 50 per cent., on first examination. Three cases, or 10 per cent., developed complications after treatment was begun. In two cases that were anterior when first seen, posterior urethritis and epididymitis developed, and in one, acute prostatitis and seminal vesiculitis were later complications.

In our series of cases there has been no irritation beyond temporary smarting at the time of injection. We have not observed the edema of the urethra and prepuce that is occasionally seen when other drugs are used. Following the first injections there is a slight increase in the amount of the discharge, which rapidly becomes mucopurulent, then serous as it diminishes in amount. With this change in discharge, the microscopic character of the discharge also changes. At first the polymorphonuclears predominate, and later the epithelial cells increase in number as the polymorphonuclears diminish. As the epithelial cells increase in number and the organisms disappear, the number of daily injections should be reduced gradually, taking about a week entirely to discontinue the drug. Any remaining catarrhal process in the urethra should be treated by the use of dilute potassium permanganate solutions (1:10,000) as a daily irrigation or silver nitrate 1:10,000. When the posterior urethra is involved, it frequently clears up before the anterior urethra, in some instances only three or four injections being necessary to render the urine in the third glass clear. Care should be taken to eliminate reinfections from prostate and vesicles and urethral strictures by proper attention to these conditions when present.

The results obtained with mercurochrome-220 in gonococcal infections have been fairly uniform. The rapid disappearance of organisms in some cases has been striking. In others there has been more or less resistance to treatment. While our series is small, the results thus far obtained seem to us to warrant a more extended trial of this drug in these infections. The results are summarized in Tables 6 and 7.

TABLE 6.—CLINICAL RESULTS OF THE USE OF MERCUROCHROME-220 IN GONORRHEA

History Number	Age, Years	Previous Attacks	Days of Disease	Extent of Involvement: Anterior	Anterior and Posterior	Prostatitis	Seminal vesiculitis	Mercurochrome-220, 1%: No. of daily Treatments	Irrigations	Gonococci: On Admission	Day after Admission: 3	4	5	6	7	8	9	10	12	Later	Day of Treatment to Free from Gonococcus	No. of Days Free	Day of Recurrence	No. Days to Free from Gonococcus after Recurrence	Complications and Remarks
F57894	22	2	2	+	0	+	0	4	0	+++	++	..	++	..	0	..	..	0	..	0	7	27	0	..	Prostatitis present on admission
F 9622	29	4	30?	+	0	+	0	3	0	++	+	..	0	..	..	..	0	..	..	0	5	?	0	..	Prostatitis present on admission
F87484	23	1	14?	+	0	+	0	3	0	+++	0	..	0	..	0	..	..	..	0	..	5	15	15	7	Recurrence due to prostatitis
G13960	22	0	7	+	0	0	0	3	0	+++	+	..	0	..	..	..	..	0	..	..	5	?	..	..	Discontinued treatment after ten days
G 8731	22	0	5	+	0	0	0	4	+	+++	++	..	..	+	..	+	..	++	++	0	16	8	..	..	Discontinued treatment after eight days
G10196	34	4	60?	+	+	+	+	3	+	++	++	..	..	..	+	..	0	..	..	..	9	..	0	..	Complications treated three weeks
G 9522	22	1	5	+	0	0	0	3	0	++	..	0	..	..	0	..	..	..	..	..	4	12	12	..	Discontinued treatment
G13733	20	1	21	+	0	0	0	4	0	++	+	..	..	+	..	..	0	..	..	..	9	5	..	..	Did not return for examination
G 8924	26	1	7	+	0	0	0	3	0	++	..	+	..	..	++	..	+	..	+	0	14	..	..	..	
B 7681	20	1	120	+	+	+	+	4	+	+++	..	+	..	..	..	+	..	+	0	..	12	21	0	..	Slight prostatitis on discharge
G 9824	28	1	7	+	0	0	0	3	0	+++	..	+	..	..	++	..	..	+	0	..	12	..	0	..	
G 8875*	22	2	10 mo.	+	0	0	0	4	+	+++	..	+	..	..	+ +	..	..	+	0	..	12	20	20	7(?)	Recurrence due to anterior stricture
G10291	24	0	7 mo.	+	0	0	0	3	0	+++	..	+	..	..	..	++	..	+	..	0	14	?	..	..	Posterior urethritis; prostatitis; epididymitis on sixteenth day
G85069	25	0	Days 4	+	0	0	0	4	0	+++	..	+	..	..	..	0	..	..	..	..	8	42	0	..	Reexamined six weeks later; cured
G 7200	30	0	5	..	+	+	0	4	+	+++	.	..	+	..	..	+	..	+	..	0	14	15	0	..	Reexamined two weeks later; cured
G 6007	23	0?	30	+	+	+	0	4	+	++	+	..	..	0	..	..	..	..	..	..	6	25	0	..	Prostatitis treated for twenty-five days
G 7820	20	0	5	+	+	+	0	4	+	++	..	+	..	..	+	..	..	+	..	..	11	7	7	26	Prostatitis; recurrence due to stricture; dilated
G 7920	21	0	21	0	+	+	0	3	+	+++	..	+	..	..	+	..	..	0	..	..	10	4	4	4	Prostatitis treated for sixty days
G 8924	24	1	7	+	0	0	0	4	0	++	..	+	..	..	..	+	..	+	..	..	14	4	0	0	Colored; did not cooperate
G13800	22	1	7	+	0	0	0	4	0	++	..	+	..	..	0	..	..	0	0	..	7	5(?)	0	0	
G12333	24	0	4	+	0	+	0	4	0	++	..	..	+	..	..	..	..	..	..	..	7	15	0	0	Few shreds in glass 1 two weeks later
G10816	26	0	7	0	+	+	0	3	+	++	..	+	..	..	..	+	..	..	..	..	11	?	0	0	
G10863	22	0	15	0	+	+	0	3	+	+++	..	..	..	+	..	..	+	..	..	..	15	?	0	0	
G11133*	29	5	?	0	+	+	+	3	+	+	0	..	..	..	..	..	..	..	..	..	3	14	0	0	Prostate and vesicles treated two weeks
G12144	27	0	30	+	0	0	0	4	0	++	0	..	..	..	..	..	..	..	..	..	3	19	19	4	Free from shreds in fifteen days
G91366	19	0	4	+	+	+	0	3	+	++	+	..	..	..	..	0	..	..	..	..	3	?	0	0	Prostatitis; seminal vesiculitis; epididymitis on ninth day
G 6748	22	0	?	+	+	+	0	3	+	++	+	..	..	+	..	..	..	..	..	..	7	?	0	0	
G13236	24	0	30	+	0	0	0	3	0	+++	..	..	+	..	+	..	..	0	..	..	10	?	0	0	
G10733	23	1	21	+	0	+	0	4	+	++	..	+	..	..	+	..	..	..	..	..	9	20	0	0	Prostatitis treated for twenty days
G 9011	21	1	90?	+	+	+	0	3	+	++	..	+	..	..	+	..	..	+	..	..	17	15	0	0	Prostatitis treated for two weeks

* Subacute; all others acute.

CHANCROIDAL ULCERATIONS

As a result of the laboratory tests demonstrating the penetrability and germicidal activity of mercurochrome-220, it was decided to use it as a local application in the treatment of nonsyphilitic venereal ulcerations. Fourteen dispensary patients were treated with the local application of mercurochrome solutions. We were able to follow ten of these patients until healed. In four cases an initial treatment was administered and some of the solution was given for local use, but the patients failed to return for further treatment and observation. All these cases were negative on repeated dark field examination for *Spirochaeta pallida*, and gave negative Wassermann reactions. No cases are included in which the patients were found to be syphilitic or were receiving intravenous arsenical medication. The type of sore was that of the old sore with undermined edges and dirty gray necrotic base which showed no tendency to heal.

These sores were thoroughly cleaned with soap and water, and all the necrotic tissue was removed. A moist dressing of 1 per cent. mercurochrome-220 was then applied, and some of the solution was given the patient with instructions to moisten the dressings twice a day with the solution. Later it was found more convenient to use a starch paste containing 5 per cent. mercurochrome-220 by weight, instead of the solution, the sore being dressed only once a day. No irritation or burning was complained of by any of our patients.

TABLE 7.—SYNOPSIS OF RESULTS DETAILED IN TABLE 6

Number of cases studied	51
Number of cases observed until an apparent cure was effected	30
Number failing to improve	6
Minimum time required to render discharge gonococcus-free	3 days
Maximum time required to render discharge gonococcus-free	17 days
Average time required to render discharge gonococcus-free	10 days
Number of cases in which complications developed after treatment was begun	3

In all of the cases, the sores cleaned off in from one to four days and presented a healthy healing surface. The prompt change in the appearance of the lesions when treated with mercurochrome was very striking. After the sore was clean and healing over, a simple ointment of boric acid was used as a protective dressing, silver nitrate being used on the granulations as needed. Whenever indicated, a dorsal slit was made and buboes were opened and drained. Tables giving the length of time required for complete healing are not included, as many of the patients left the clinic after the sore was partly healed.

CONCLUSIONS

1. Mercurochrome-220 is experimentally a drug of great germicidal value, a solution of about 1:1,000 killing *B. coli* and *Staphylococcus aureus* in urine in one minute. It has practically fifty times the germicidal strength of acriflavine in urine medium for exposures of one hour.

2. In a strength of 1 per cent. the new drug is tolerated by the human bladder for from one to three hours without irritation. Injections of 1 per cent. solution into the renal pelvis are likewise free from pain, even when held in situ by plugging the catheter.

3. That mercurochrome-220 has a remarkable germicidal value is shown by the rapid sterilization accomplished in a series of cases of cystitis and pyelitis of long-standing and refractory to other treatments. Now for the first time we feel that we have a method of quickly curing certain chronic infections of the bladder. The rapidity with which a few cases of old purulent cystitis disappeared was surprising, becoming free of pus and bacteria in a few days.

4. Studies of the comparative value of acriflavine and mercurochrome-220 in gonorrhea are not yet complete, but it has been demonstrated that with both drugs, methods of great value in the treatment of the disease have been produced.

5. Mercurochrome-220 has proved to be eminently satisfactory in the treatment of chancroids and as a dressing for buboes after incision.

Other drugs developed along the same lines have been produced and are being experimented with by us.[11]

ROENTGEN-RAY TREATMENT OF WIDESPREAD AND GENERALIZED DISEASES OF THE SKIN *

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In the early days of the roentgen-ray therapy of skin diseases, those who resorted to this mode of treatment employed it chiefly in certain cutaneous affections which, as a rule, were restricted in area, or were limited to certain well defined regions of the body, or occurred only as circumscribed or isolated lesions. For example, such affections as epithelioma and sarcoma, the various granulomas, keloid, ringworm of the hairy surfaces, and other diseases which did not readily respond to the older methods of treatment in common use at the time, would be, so to speak, consigned to the mercies of the roentgen ray, to reap the benefits of, or to suffer the evils from a subtle and powerful therapeutic agent, the precise nature and action of which is to this day unknown. Even in such relatively small and well defined lesions as basal cell epitheliomas, keloids, warts and circumscribed granulomas, the administration of the roentgen ray was at one time, not far gone, a more or less haphazard, indeterminate process, the outcome of which, if it resulted favorably, was often at best only "the happy combination of fortuitous circumstances."

EXACTNESS IN THE ADMINISTRATION OF DOSAGE OF RAYS

As is well known, the last few years have witnessed great strides in the science and art of roentgenotherapy as applied to cutaneous affections. Improvements in the manufacture of the various types of exciting apparatus, and in devices for measuring the quality and quantity of the rays, have done much toward the introduction of many refinements in technic, so that we are enabled today to measure the exact quality and to determine the exact quantity of a given roentgen-ray

11. In treating acute anterior gonorrhea, we are at present using a .25 per cent. solution of mercurochrome instead of 1 per cent. This may be used every three hours, and should be preceded by a cleansing irrigation of sterile water. It causes a little more burning than the 1 per cent. solution, which, however, is temporary. On incomplete data, it seems that the time necessary to render the urethra organism free is definitely shortened by the use of this stronger solution. No unfavorable complications have been observed. At present a series of cases is being treated by the use of 5 per cent. mercurochrome in lanolin, and petrolatum equal parts, instead of the starch paste. Incomplete results indicate that the lanolin ointment is as efficacious as the starch paste, and more easily prepared.

* Read before the Section on Dermatology at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

emanation, without the least difficulty; in other words, we can easily administer an exact dose of roentgen rays. These improvements in apparatus and advances in technic have culminated in the production of the Coolidge tube with its remarkable flexibility and its steady delivery of rays of uniform quality.

The present-day degree of perfection attained in this method of treatment of skin diseases may therefore be measured by the facility and the simplicity with which a given dose may be safely and accurately administered, within a specified and reasonable length of time. This degree of perfection was not arrived at without much laborious experimentation and investigation; and the modern dermatologist owes a large debt of gratitude to such diligent workers and scientists as Sabouraud and Noiré, Benoist, Holzknecht, Kienböck, Pusey and Caldwell, MacKee and Remer, Witherbee, Shearer, Corbett, Hampson and many others, too numerous to mention here.

TECHNIC

For the benefit of those who have not yet taken up this method of dermatotherapy and who contemplate doing so, I will briefly describe the technic which I employ with the best results in my practice and the effects of which I have constantly the opportunity to observe in the roentgen-ray service of the Vanderbilt Clinic, under the direction of Dr. John Remer. This technic has been elaborated and standardized by Drs. MacKee and Remer, and it is to them that I am indebted for my acquaintance with the more recent refinements of roentgen-ray administration.

Heretofore it had been necessary to employ a Holzknecht radiometer and a Benoist penetrometer or other similar devices designed for the purpose of ascertaining the quality and quantity of roentgen-ray doses. With the advent of the Coolidge tube, however, these measuring instruments are no longer essential to practical and accurate dosing. The vacuum of the Coolidge tube being stable and constant, the dosage may be determined by the observance of other important factors: namely, the length of the parallel spark gap, the distance between the anode of the tube and the skin, the amount of current passing through the tube during a given exposure, and the length of time of the exposure.

Apparatus.—Many excellent types of apparatus are on the market. That which I use consists of a two kilowatt, sixty cycle transformer unit, with a rotary converter to convert the direct current of 220 volts to an alternating current, and with a so-called rectifying disk, mounted on the same shaft. Attached to the cabinet are an amperemeter, a rheostat, a milliammeter for the exciting current, and a meter for the Coolidge tube filament. The filament is heated by a current from a small, separate rotary converter, fed by a 110 volt main, the current from which is passed through a step-down transformer. An apparatus of this type appears to be sufficient for all purposes which the dermatologist is likely to require in his daily practice. It is capable of backing up an 8-inch parallel spark gap, and may therefore be employed also for deep therapy, a filter of 3mm. of aluminum being used.

Standardization of Apparatus.—This apparatus was standardized according to the method suggested by MacKee and Remer. To obtain one Holzknecht unit at "skin distance," that is, with the exposed pastil of barium platinocyanid resting on the skin, the following factors were found to be serviceable as convenient working constants: length of parallel spark gap, 6 inches; amount of current passing through the tube, 2 milliamperes; distance from the anode to the skin, 8 inches; time of exposure, three minutes.

With the Coolidge tube backing up a 6-inch parallel spark gap, the Benoist penetrometer reading is approximately No. 8, that is, a "hard" ray. Experience has taught that a No. 8 to 9 B ray is to be preferred in dermatologic practice, to much softer or much harder emanations.

Accessories.—A stout wooden table, 6½ feet long, 2 feet wide and of the height of an ordinary dining room table, fitted with heavy roller casters, is most useful. It should be fitted with an adjustable head rest and leg and arm rests, preferably made of wood, and so constructed that they may be folded and put out of the way when not in use. A heavy tube stand, constructed with a well-balanced counterweight and a stout lead glass bowl for the Coolidge tube is to be preferred to the lighter wooden stands, the risk of accident to tube and patient being lessened with the use of a heavy apparatus. An overhead trolley system for conducting the leads to the tube, and a lead screen to protect the operator, complete the outfit.

Method of Administration.—In a general way, it may be said that the treatment of widespread and generalized skin diseases consists in the administration of repeated fractional doses to the entire affected integument. In the majority of eruptions a dose of one-eighth to one-quarter Holzknecht units at "skin distance," administered once or twice a week, over periods varying from two to eight weeks, is sufficient to bring about involution of many of the dermatoses amenable to the treatment, so that the skin is exposed to a total dosage varying from three-quarters to one and a half Holzknecht units (skin distance) in from three to eight or nine weeks. These figures are, of course, only approximate, being subject to considerable variation. For example, a superficial, thin-scaled generalized psoriasis may involute under a half or even a quarter the amount of radiation that would be required to heal a chronic, infiltrated and thick-scaled eruption of the same disease. Again, certain eruptions as a whole require different amounts of roentgen ray and different intervals between the exposures: for example, the smooth plaques and the elevated tumors of mycosis fungoides, which may occur simultaneously in one patient.

Exposures of Large Areas of the Skin.—When large areas, such as the anterior surface of the trunk, or the entire back, are to be treated, the rays are so administered as to permit of an approximately equal distribution of the dose over the flat and convex surfaces of the body. This is accomplished by allowing the rays to overlap from different focal points of the tube, on the same principle as the Kienböck-Adamson method of treating ringworm of the scalp, although the accuracy of the latter method cannot be duplicated in treating the trunk, nor is such exact dosage strictly necessary for practical purposes. The usual procedure is to expose certain regions of the skin in succession, as both sides of the upper chest, both sides of the mid-thoracic region, both sides of the abdominal region, etc., each area receiving the required one-eighth to one-quarter unit of radiation. Investigations bearing on this technic were carried out, about a year ago, by

W. H. Guy,[1] under the direction of MacKee and Remer. Guy found that a uniform dosage of roentgen rays striking a flat surface is not circular in outline as was thought to be the case, but is elliptical, with the long axis of the ellipse at right angles to the long axis of the tube. Employing a standard treating distance of 8 inches from the anode, the ellipse measured 8 by 4 or 5 inches. To quote from Guy's paper:

> Thus at 8 inches the selected points for treatment should be not more than 5 inches apart in the long axis of the tube if the method of multiple application be followed. On the other hand, if one uses the open tube and allows for overlapping of rays, then in the long axis of the tube, treatments should be applied about 10 inches apart; at right angles to the long axis of the tube, about 15 to 20 inches apart. This of course applies only to a flat surface, concavities and convexities being allowed for, according to the law that intensity varies inversely as the square of the distance, excepting when using filtered rays, when the rule of direct proportion applies, as recently established by Remer and Witherbee. In treating large or convex surfaces, the law relative to the intensity being in direct proportion to the sine of the angle of incidence, must be considered. By increasing the distance from the anode we found that the size of the elliptical field increased proportionately, but was not as well defined as at the shorter distance. On the other hand, when the tube was moved nearer, the field was narrowed. Thus, if one desires to treat a comparatively large area by a single application, approximately accurate dosage may be obtained by placing the tube farther away.

Subdivision of Doses.—It is unwise, and may even prove to be dangerous, to expose more than one third or even one fourth of the body surface at the same sitting, or on the same day. It is best to allow several days to intervene between the treatments, so that approximately two exposures a week are administered, when the entire skin requires radiation, the different regions of the body being treated at different times. For example, the arms and thighs may be exposed to the rays at one sitting, to be followed, after a lapse of three or four days, by roentgenization of the skin of the back or of the chest. This is done to obviate all risk of toxemia from absorption products or ill effects brought about by changes in the blood, resulting from exposure of large surfaces of the integument to roentgen rays.

When treating extensive surfaces, such as the chest and abdomen or the back, cognizance must be taken of the law that the intensity[2] varies inversely as the square of the distance. That is, the quantity of roentgen rays striking a given area of integument varies inversely as the square of the distance between the anode and the skin. In the application of this rule in practice—for example, in exposing the entire chest of a man—the anode may be focused at a given distance above each nipple, to which areas a certain dose is administered, say ¼ H unit over each breast. In this procedure, calculations based on the law of intensity determine the quantity of rays striking the area of skin between the two focal points, in this case, each nipple; that is to say, the sternal portion of the chest receives overlapping rays from each lateral exposure, approximately equivalent to ⅛ H unit from each side, resulting in a ¼ H dose to the intermammary region.

Two Groups of Skin Diseases.—Broadly speaking, the extensive dermatoses that most favorably respond to roentgenotherapy may be placed in two groups. The first group comprises those in which a lasting amelioration of the symptoms or a permanent cure is to be expected; the second group comprises those in which only a temporary subsidence or removal of the lesions can be hoped for. The first group includes such diseases as lichen planus, seborrheic dermatitis, various forms of eczema, extensive eruptions of pityriasis rosea and of acne, generalized prurigo, and various forms of lichenification. The second group embraces psoriasis, dermatitis exfoliativa, pityriasis rubra, mycosis fungoides, leukemia cutis, the various forms of sarcomatosis and lymphogranulomatosis, Darier's disease, acanthosis nigricans, and other dermatoses having a tendency to implicate extensive surfaces of the body.

1. Guy, W. H.: Experiments with Roentgen Rays and Radium, J. Cutan. Dis. **36**: 332 (June) 1918.
2. Amount or quantity of roentgen rays.

THERAPEUTIC RESULTS

I do not intend, in this paper, to go into details with regard to the therapeutic results obtained in these various dermatoses. It will suffice to say that extensive outbreaks of eczema, seborrheic dermatitis, lichen planus, widespread lichenifications, psoriasis, dermatitis exfoliativa, infectious eczematoid dermatitis and similar obstinate diseases respond to the treatment much more readily, and exhibit involution of the lesions much more rapidly, than they do under any other form of therapeutic procedure. Very few cases of this kind fail to show distinct improvement after a series of exposures amounting to three quarters to one and a quarter units of roentgen rays, administered over a period of from three to eight weeks.

The advantages of roentgenotherapy over the older methods of treatment with ointments, lotions, plasters, etc., need not be enumerated. In the pruritic eruptions, the itching, smarting and burning sensations usually are relieved after the second or third exposure. The annoyances and inconveniences attending the use of external applications are eliminated. Patients with extensive eruptions of psoriasis are freed of their trouble, if only for a time, within from three to six weeks, without resorting to mercury, tar or chrysarobin inunctions, although they are advised to use petrolatum or cold cream to hasten the elimination of scale formation. In my experience, seborrheic dermatitis and psoriasis respond to the treatment more rapidly than the other affections above mentioned, the various lichenifications of the skin and lichen planus of the diffuse variety being next in order. In some patients, a well marked pigmentation of the skin remains at the sites of the lesions for several weeks after involution has taken place, especially after psoriasis and lichen planus.

With regard to the graver dermatoses, such as Darier's disease, mycosis fungoides, leukemia cutis, disseminated sarcoma of the skin and related maladies, we have in roentgenotherapy practically the only remedy which may be said to be of the slightest practical value in the treatment of extensive diseased surfaces. The most striking results are obtained in mycosis fungoides and Kaposi's sarcoma. In cases in which the lesions are not too far advanced, and sometimes even in the most advanced instances, the individual plaques, tumors and ulcerations are often healed without difficulty and in a remarkably short time. Not only does roentgenotherapy keep alive the patients with these diseases, but, if they submit to persistent and judicious treatment, they live in comparative comfort and retain a fair state of general health. In mycosis fungoides the ordinary unfiltered applications suffice

to bring about involution of most of the lesions; but in the various forms of disseminated sarcoma it has been found necessary to employ the deep, filtered ray to restore the tissues to their normal state (Remer). It is quite true that roentgen rays do not cure patients with these grave maladies; the lesions recur sooner or later, and the victim dies of metastases or intercurrent disease. But it is equally true that no other form of treatment can compare with roentgenotherapy in effectiveness with regard to the relief of subjective symptoms and objective signs, and with regard to checking the progress of the disease and retarding the fatal outcome. To permit this class of patients to spend the few remaining months or years of their lives in constant agony, when relief and perhaps even cure may result from roentgen treatment, seems to me to be nothing short of heartless negligence.

OTHER DISEASES AMENABLE TO ROENTGENOTHERAPY

I[3] recently reported an instance of acanthosis nigricans of the juvenile type, occurring in a young woman under my care. She presented typical and well pronounced lesions implicating practically the entire body, with rugose and papillary growths in the axillae and the groins. A series of roentgen-ray treatments, extending over a period of five months, has resulted in complete involution of the lesions, so that her skin today is normal in appearance and texture. Cognizance is taken of the fact that the juvenile variety of this disease occasionally heals spontaneously; but the fact remains that until the rays were administered, no definite signs of healing were manifested in this patient's eruption.

In the treatment of pityriasis rubra pilaris, dermatitis herpetiformis and the various bullous and desquamative diseases grouped under the head of pemphigus, I have had too little personal experience to venture an opinion as to the efficacy of roentgenotherapy. But I feel that we are justified in giving this form of treatment a very thorough trial in such affections, knowing, as we do, that in most instances our efforts to cure the patients or even to ameliorate their symptoms with the older remedies usually prove to be fruitless.

CONCLUSION

The carefully computed fractional dose administration of roentgen rays may be used with impunity in the great majority of extensive dermatoses, which do not readily respond to the usual older remedies; and though it is true that certain maladies seem to be not susceptible to the healing properties of the rays, roentgenotherapy should nevertheless be given a chance to prove its worth, in the knowledge that no harm, and possibly a great deal of good, may result from its judicious administration in many of the widespread dermatoses.

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ABSTRACT OF DISCUSSION

Dr. Everett S. Lain, Oklahoma City: I was pleased to hear this very concise and interesting résumé of Dr. Wise's experience with the roentgen ray. He has gone into the details so explicitly as regards the technic that it seems that almost any one might follow his technic and do successful work. There are a few things, however, on which he was not so explicit and which might lead to error on the part of some one attempting to treat diseases. Of course, it was only lack of time that Dr. Wise did not mention these things. He considers the advantage of treating psoriasis by roentgen ray though he certainly should have mentioned the misfortune one might have in treating the scalp with this agent, also over the eyebrows and eyelashes. However, in my experience, and that of others too, a first depilatory ray is usually not permanent. Dermatitis herpetiformis, I believe, belongs in the second group, as mentioned by Dr. Wise. It is more benefited by this method than by the use of medicine, but, like psoriasis, it is sure to return unless some etiologic factor is sought and removed. He mentions the use of only one radiometer, the Holzknecht. If I am not mistaken that is not obtainable at present. I was unable to obtain the pastiles soon after the war began and so had to invest in another, a Hampson, and I believe it is more convenient for the inexperienced man than the Holzknecht is. No one should attempt treatment at all without first measuring his machine carefully. Every machine varies. No two machines will give exactly the same output under the same conditions, for many reasons; first, because of the different windings in the various coils, also because of the different output conditions in the various cities. Again, the same type of machine from the same manufacturer, in my experience will not always give the same amount of ray which a former machine may have measured. Machines should always be carefully tested before attempting roentgen therapy.

Dr. George M. MacKee, New York: I believe that a technic has been developed that stands all the requirements of practical work, a technic that is very versatile and that can be handed from one individual to another and used on any apparatus in any part of the country. Dr. Remer and Dr. Witherbee, among others, have tested this technic very accurately in every way on every transformer we have been able to find in the different cities, and the results are absolutely the same. What Dr. Lain says one must take cognizance of, of course. The technic, although accurate, is by no means fool proof, and one must not only be acquainted with the technic but with all possible errors. The technic cannot be made fool proof. It is no longer necessary, I am glad to say, to depend on any form of radiometer whatever. It is possible to estimate the dose with arithmetical accuracy, provided a man has had any experience. Any technic that can be used on the scalp by a number of different individuals, some of them necessarily in different cities, certainly stands all the tests, and that has been accomplished. Listening to Dr. Wise's paper has made me a little reminiscent and I cannot help but recall the difficulties we had ten or fifteen years ago. Those of you who are undertaking the work now do not realize the difficulties the earlier workers encountered and overcame, some of them dying in the attempt. There was at first a wave of enthusiasm and confidence and everybody was going to treat everything with the roentgen ray. That wave did not last long and was followed by a wave of pessimism and it was difficult to get permission to apply the roentgen ray, either from the patient or the patient's doctor. Within the last few years, thanks to the efforts of a few scientifically inclined dermatologists and roentgenologists, we have roentgen-ray therapy placed on a scientific basis and there is again a feeling of confidence. I would urge that those who write on roentgen rays and use them pay particular attention to technic and the avoidance of statements that are not conservative. Otherwise we will have history repeated and in claiming results we cannot get, together with untoward results associated with overconfidence and carelessness, we may have another wave of pessimism. Thanks to modern technic, the day of the acute roentgen-ray burn has passed, but the day of sequels has not passed, and that has not so much to do with the roentgen ray as with judgment. That depends on the judgment of the person using it and that requires a certain amount of experience which is within any one's reach. Sequels such as telangiectases, atrophy, roentgen warts and epithelioma can be avoided. We make it a rule in the clinic never to produce an erythema, except in some cases where we are justified in doing so, such as in epithelioma. We never produce an erythema in any disease where it is not absolutely necessary,

3. Wise, Fred: Acanthosis Nigricans Following Decapsulation of the Kidneys: Report of a Case, J. Cutan. Dis. **36**: 35 (Jan.) 1918.

because an erythema may lead to telangiectasia and atrophy years afterward. It is not only a question of technic but also of judgment.

DR. J. D. GIBSON, Denver: Unfortunately, many of us got our burns before the technic was produced, and I was one of them. We must watch the treatment and know what we are trying to accomplish. In skin treatments we must never lose sight of the fact of whether we want to get a reaction or not. In the deep conditions we usually want a reaction, but in many of the others, like psoriasis, it is not necessary to produce a profound reaction.

DR. WALKER J. HIGHMAN, New York: In substantiation of Dr. MacKee's experiences, I wish to state that the latter were confined on the skin service at the Walter Reed General Hospital, Washington, D. C. The scheme of dosage suggested by MacKee was followed.

DR. JOSEPH ZEISLER, Chicago: It is with a great deal of hesitancy that I get up to say a few words, not at all in criticism of what has been presented and with admiration of the modern progress in roentgen-ray therapy. But after all, we should hold to this maxim; we employ roentgen rays for the purpose of accomplishing a certain result and in doing so we should avoid harm. If these two conditions are fulfilled the technic becomes of minor importance. I think I am expressing not only my own view but also that of Dr. Pusey when I say that with fractional doses these conditions can be fulfilled. I do not deprecate massive doses. I have employed fractional doses for eighteen years and have never had a sleepless night or any worry whatever on their account. In using the roentgen ray for generalized dermatoses I have always held that it should serve merely as an adjuvant, and that the more important consideration is the underlying cause.

DR. GEORGE M. MACKEE, New York: We have not been talking about massive doses. These are used only in a very few conditions, like plantar warts, epithelioma, etc. What we have been talking about is not a massive dose but a carefully measured dose, so that we know exactly how much is given. If so much treatment is given per week, we know how much per month. The technic is so simple in that respect that in Dr. Fordyce's clinic I simply write out a prescription for the dose. We advocate carefully measured doses, fractional or intensive, and with a technic that can be made universal so that results may be duplicated by the same operator and by other operators.

DR. HENRY H. HAZEN, Washington, D. C.: I would like to agree with everything Dr. Wise and Dr. MacKee have said. I have had several years' experience and in the last four years have been using the measured dose. If there is anything I dislike to get it is a patient coming from a man who does not measure his dose and does not know what the patient has received. You have no idea where the patient is going to get off or where you are going to get off. You cannot possibly send the patient from one man to another unless you can tell absolutely what has been done. So far as personal results are concerned, in the case of my own patients who have not been referred I can see no more comparison than between daylight and darkness and I would not think of going back to the old methods of unmeasured dosage. One thing I think we should be careful about at present. In view of the fact that we are using the Coolidge tube and much larger doses, it seems to me that the safety of the operator should be looked after. We are using a very powerful ray and we should protect the operator. For that purpose I have a telephone booth with lead on four sides and a switchboard inside, with holes for ventilation. It seems to me we should not neglect to protect ourselves and I do not think that a lead screen in front is sufficient. I thought that with the various Coolidge tubes I had I could estimate my dose in the manner mentioned. Then something happened and I had to use an old tube with a heavy metal deposit on it. I apparently found that with this tube we did not get quite the radiation with the same technic as we had before. It seems to me possible that with an old tube with an extremely heavy deposit there might be some slight difference in the result.

DR. R. A. MCDONNELL, New Haven, Conn.: In the employment of roentgen rays and radium we sometimes neglect adjuvants to their use. I have not heard anything said about the advantages of curetting such lesions as epitheliomas and other deep growths before using the roentgen ray. In the last few years I have made it a rule to use the curet on the lesion before using the roentgen ray, and when that is done it is possible to get results with a much smaller dose, and consequently greater safety.

DR. GEORGE M. MACKEE, New York: In regard to using an old Coolidge tube: We have naturally tried out a large variety of tubes, old and new, and we now have one old tube that is absolutely black, but there is no difference in the results obtained. No two tubes have exactly the same resistance in the filament but that makes no difference. We pay no attention to the filament meter for we are guided entirely by the milliamperage and spark gap.

DR. FRED WISE, New York: Dr. McDonnell evidently misunderstood me. I was speaking not of epithelioma but of widespread skin diseases, in which the curet is not used. Dr. Lain's remarks were apropos; I failed to state that seborrheic dermatitis and other scalp diseases should not be treated in the scalp and eyebrow region with large doses of roentgen rays. One thing should be emphasized for those who are not acquainted with roentgen-ray technic and that was one point that I brought out. It is no longer essential to employ the various radiometers and penetrometers to obtain exact dosage, so that we are not dependent on various European devices as we were heretofore, but are enabled to measure accurately a dose of roentgen rays by means of the various factors which were elucidated in my paper.

SPECIAL SPLINTS FOR CERTAIN INJURIES AND DISABILITIES OF THE EXTREMITIES*

E. W. CLEARY, M.D.
SAN FRANCISCO

War and the accidents of civil industry produce large numbers of injuries to the extremities, the care of which involves the problem of splinting active ambulatory patients. Satisfactory appliances must be light, secure of adjustment and so contrived as to disturb the statics and dynamics of the wearer to the minimum degree consistent with the performance of the function for which the splint is prescribed. It is my purpose here to describe three appliances developed in caring for several hundreds of war wounds of the extremities. These appliances are (1) a shoulder abduction splint; (2) an elbow and knee traction splint, and (3) a forearm supination splint. Three models of the shoulder splint and two of the elbow splint are to be presented.

SHOULDER ABDUCTION SPLINT

The framework of the simplest model of the shoulder abduction splint is shown in Figure 1, and the complete appliance in Figure 2. This splint is remarkably comfortable because (1) it disturbs the statics of the wearer hardly at all; (2) the weight of the disabled arm is supported by a broad leather saddle on the well shoulder, and (3) though no metal part presses against the body, yet no ordinary activity can disturb the adjustment. With a pair of brace wrenches the frame can be bent and shaped to carry the arm at almost any angle within the normal range of motion. Patients wearing this splint bear themselves with a relaxed and easy carriage which is in marked contrast to the strained posture of those wearing any type of splint

* Observations made and work done while the author was chief of the orthopedic section, U. S. Army General Hospital No. 9.

which throws the weight of the abducted arm and of the appliance all, or nearly all, on the side of the injury, thus throwing to that side the center of gravity of the body.

The construction is so simple that one shopworker, without special machinery, turns out a complete frame (Fig. 1) in twenty minutes. We use the detachable diagonal brace only when an extra heavy patient is fitted, or when lighter rods are used for the frame. We have found it expedient to have a stock of splints made up in a standard size. By adjusting with wrenches we are able to make this standard size serve for the average man weighing from 130 to 185 pounds. We make special sizes for very small and very large patients.

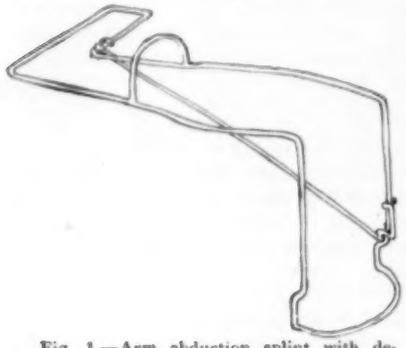

Fig. 1.—Arm abduction splint with detachable brace. For left arm (frame only, rear view).

In order that the reader may clearly visualize the appliance, I will describe the making of a standard size abduction splint as if it were being shaped about the body of the patient:

A soft iron rod 12 feet long and five-sixteenths inch in diameter is bent into the shape of a double pointed carpet tack with legs of equal length and a middle segment 12 inches long. The middle segment is curved to fit the waist on the uninjured side at the level of the iliac crest, the two ends pointed upward. Each end is bent laterad through a right angle at a point 2 inches above the middle segment. Another right angle bend in the reverse direction is made in each end of the rod one-half inch higher. These bends form offsets which will keep the belt of the finished splint from slipping upward. The end sections of the rod now stand upright, one in front of, and the other behind, the well shoulder. The next step is to bend each horizontally across the body, 1 inch above the level of the axilla. Both horizontal segments are given a slight curvature, with the convexity toward the body. The injured arm is brought to a position of 90 degrees abduction, with the elbow in right angled flexion in the horizontal plane. The rear rod lies behind the arm and projects beyond the elbow. It is now bent forward through a right angle, 26½ inches from the last bend, so that it lies along the forearm. In the same way, the front rod is bent at a point 21½ inches from its last bend, so that it extends forward inside the forearm. Eleven inches from the bend at the elbow this inside rod is now bent through a right angle across the hand. The outside rod is bent inward through a right angle where the inside rod crosses it, and the surplus ends of the two rods are cut off so that when the ends of the frame are brazed together the space between the inside and the outside forearm rods is 5½ inches. A piece of five-sixteenths rod 13 inches long is bent into an arch and brazed to the front and rear rods so as to arch over the injured shoulder. Its purpose is to increase the rigidity of the frame. It should never rest on the shoulder when the splint is adjusted. The construction of the detachable diagonal brace is sufficiently well illustrated by Figure 1.

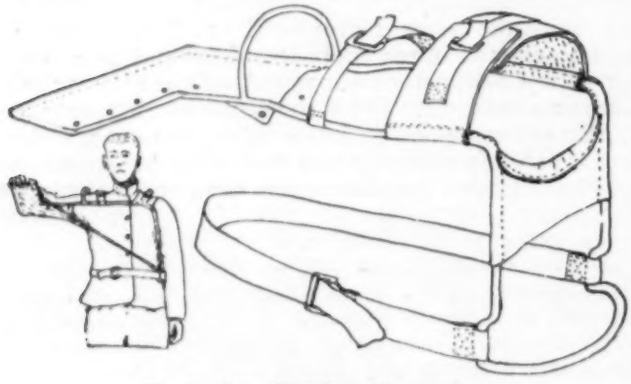

Fig. 2.—Arm abduction splint complete.

The splint is completed, as shown in Figure 2, by the addition of a waist belt of webbing 2 inches wide, and by leather axillary and shoulder saddles. The axillary saddle has a thick roll of felt under leather at the top edge, and its front and rear borders arch up to the angles of the frame and are sewed firmly to the acromial borders of the shoulder saddle. This is a very important detail, as it makes a firm armpit for the well shoulder and adds an essential factor to the stability of the splint. Both axillary and shoulder saddles should be of leather and 4 or 5 inches wide. The two flaps of the shoulder saddle are held firmly down by a strap and buckle, as illustrated. For additional stability, a webbing strap may be added to buckle over the injured shoulder (Fig. 2), but this should never be tightened so as to carry any considerable weight. A flap of canvas is sewed to the outside of the arm piece from the axilla to the hand. The inside edge of this flap is provided with eyelets and laced to the inside rod. Only in severe cases is it necessary to undo this lacing to put on the splint. Many of our patients whose condition necessitates their wearing the splint only during the day, put on and remove their own splints. When the No. 1 model is to be worn night and day, we sew a strip of thick leather, 3 inches wide and 14 inches long, so that it lies between the rear rod and the body. The leather is padded with felt. Patients sleep without special discomfort in a splint so padded. We are, however, coming to use almost exclusively for continuous wear the model shown in Figure 4.

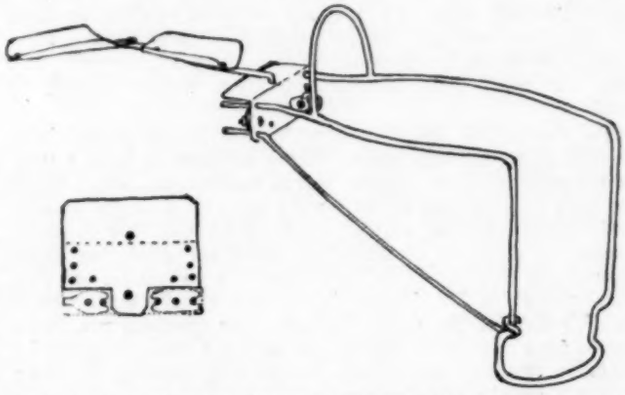

Fig. 3.—Arm abduction splint with shoulder and elbow hinges. For use on either arm—adjustable to breadth of shoulders. (Inset shows detail of hinge plate.)

A reversible abduction splint capable of a considerable degree of adjustment as to size, and applicable to either right or left arm injuries, is shown in Figure 3. The hinge plate is of sheet iron one-sixteenth inch thick. A sheet 6 by 5½ inches will cut for the hinge plate and the two locking plates. The holes in the locking plates are farther apart than the corresponding holes in the hinge plate. Each locking plate is curved

sufficiently to make the holes correspond to those in the hinge plate. When the locking plate is in place, tightening the bolt through its center effectually locks the rods which pass through the end holes, so that they cannot slip in the hinge plate. One locking plate is made with a lug instead of a hole at one end. This lug goes into the hole at the back of the hinge plate which receives the end of the diagonal brace when the splint is reversed. On account of the wide range of motion permitted to the abducted arm, this splint has to be fitted with a diagonal leather strap from the rear belt offset to the hinge plate at the rear. The axillary saddle used is made to unbuckle at one end for convenience in applying the splint; the strapping is otherwise the same as in Figure 2. Owing to the satisfactory way in which the other models meet the requirements of most patients, this model has not been much used.

The all-anterior model of the arm abduction splint shown in Figure 4 has two advantages: (1) it may be applied with ease to even the severest injuries, and (2) no metal crosses the back of the patient and interferes with his comfort when he is lying in bed. The frame is but little more difficult to make than that of the Figure 1 model. The distance between the axillary half loops (standard size) should be 14 inches. The vertical distance from the horizontal bar to the lower edge of the waist belt should be 15 inches. Other dimensions are the same as in the standard size of the Figure 1 model. In this model a broad leather strap crosses the back from the rear border of the axillary saddle and fastens by two flat buckles to the rear of the axillary half loop on the injured side. A diagonal strap, extending up from the rear waist belt offset, buckles just below the broad horizontal strap. Thus, a leather triangle at the back corresponding to the metal triangle in front holds the splint firmly in place. Buckles must be close in the axilla so as not to come under the back of the recumbent patient. The axillary saddle is as described above and shown in Figure 2. It extends between the metal half loop and the body and should carry all the pressure of the axilla and the side. The metal loop should stand free and function only as a stay. It is a fundamental principle of every model of this type of abduction splint that all the weight and pressure of the body be sustained on fabric straps and leather saddles, and not on metal parts. In the all-anterior model, the rear of the shoulder saddle is sewed partly to the short horizontal segment of the frame at the rear of the axillary half loop and, for the rest of its width, to the broad strap crossing the shoulders. The buckle strap of the shoulder saddle should attach to the frame and not to the back strap.

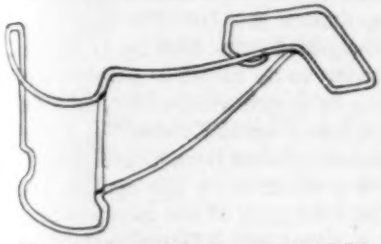

Fig. 4.—Arm abduction splint (left). Frame with double anterior brace. No metal across the back.

The arm, supported on one of these abduction splints, lies relaxed on a comfortable platform. It may be subjected to traction, tied down firmly, or allowed any degree of motion consistent with the patient's welfare. I have seen a patient whose arm was being held in right-angled abduction using a small carpenter's plane with the abducted hand. If it is desired to hold the arm directed forward at an angle of 45 degrees to the sagittal plane of the body, a position much favored by some eminent surgeons, the splint can easily be adjusted for this position by bending the rods. I have observed, however, that patients who are much of the time in an erect position prefer to have the arm abducted straight out from the side. This is specially true of those whose forearms may be left free for use of the wrist. A patient with the splint adjusted straight out can, without disturbing the abduction of his shoulder, swing his forearm inward free of the splint and do many sorts of things with his hand and wrist without having the splint so much in his way as if it were bent forward 45 degrees.

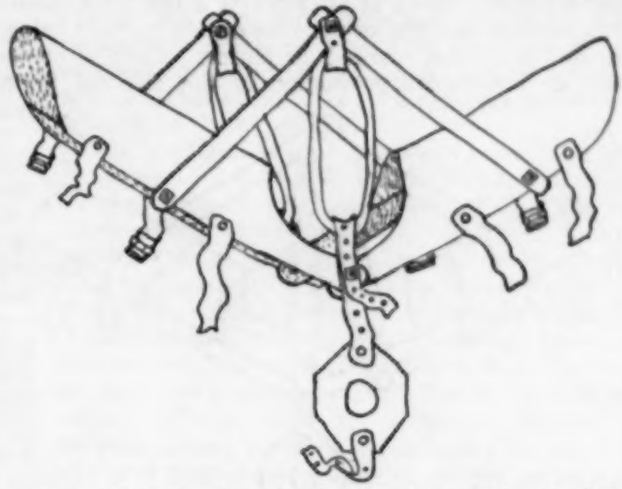

Fig. 5.—Elbow extension splint for increasing extension by elastic traction, the so-called "diamond splint."

Very light frames made according to the all-anterior model of this splint should be of much service in caring for the pitiful little dangle arms left by infantile paralysis. An appalling amount of disability and suffering is still occurring for the want of an ideal shoulder abduction splint. I believe that such a splint must provide for the carrying of the weight of the injured arm on the well shoulder and the axilla. I trust that the models presented will direct attention to this fundamental principle of successful shoulder abduction splinting.

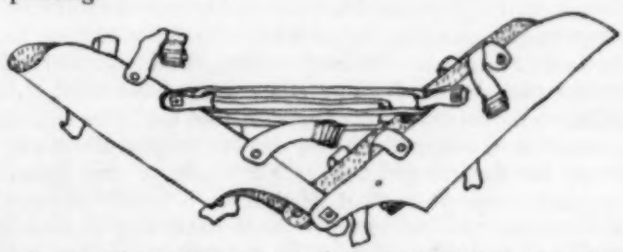

Fig. 6.—Elbow splint, same as in Figure 5, adjusted to increase flexion.

ELBOW AND KNEE SPLINTS

Elastic traction as an agency for the correction of deformity has, through misuse and injudicious use, come somewhat into disfavor. I have found it of very great assistance in the treatment of a large number of elbow and knee injuries involving limitations in joint motion. When india rubber is used with sufficient patience and discrimination, I consider it one of the most potent of all agencies for the restoration of joint function. Extreme care must be taken not to apply

too great a force. The amount of a continuously acting force necessary to increase the range of motion in a joint tied up with scars and adhesions is often surprisingly small. It is usually best to begin with very light traction and gradually to increase it until careful measurements, taken at intervals of a few days, show definite improvement, or until the degree of force being exerted is causing marked discomfort. Definite acute pain or inflammatory reaction in the affected joint

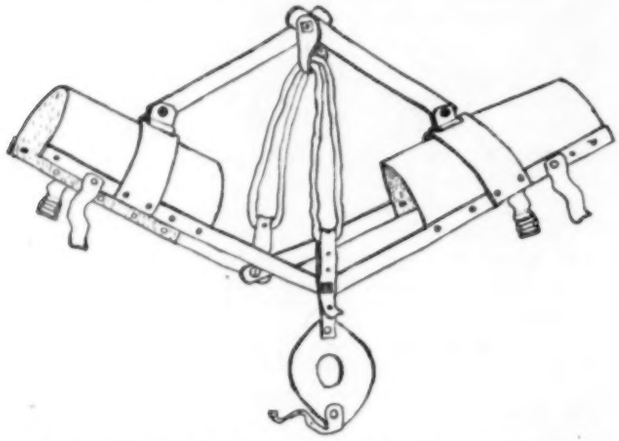

Fig. 7.—Elbow splint, light model, made of "vulcanite" fiber.

indicates that too great force is being applied, or that the condition is unsuited for this treatment. When such a reaction occurs, traction should be discontinued at once and the joint immobilized until all signs of reaction have for some days been absent. Very light traction may then be again begun. A dull ache is usual after hours of efficient traction, and is not an indication for discontinuing the treatment. It is practicable to relieve deformities by the use of rubber traction only by imitating that slow, insidious, persistent march by which the forces of gravity, muscular pull and connective tissue contraction produce deformities. Stretching and pressure atrophy are accountable for the results obtained.

Figures 5, 6 and 7 illustrate the types of splint which we are using in elbow cases. For knee extension, I use a heavier, longer splint, built as shown in Figure 7, but with two pairs of traction levers. For exerting traction, I prefer loops cut from the end of new automobile inner tubing, varying the width of the cut according to the force required. Ordinary rubber bands of assorted widths may be used. For elbows, we have used the Figure 5 model most for extension, and the same splint, reversed and stripped of traction levers and olecranon strap, for flexion (Fig. 6). The cuffs of this splint are each made of a sheet of thin tin 8 inches square. A three-fourths inch strip is bent back and flattened along two opposite edges. The flat pattern is then cut roughly to the shape of a dress shield. The cuff is bent into a semicylinder, the doubled edges forming the sides. The two horns of each cuff are rounded and drilled. Each horn, bolted to the corresponding horn of the opposing cuff, forms half of the elbow hinge. Four iron straps, one-eighth by one-half by 6 inches, make the traction levers. These are drilled at each end and bolted together at one end in pairs. Each pair is bolted by its free ends through holes drilled midway in the corresponding edges of each cuff. Stove bolts, three-sixteenths by one-half inch, are used. Adjustable leather button straps, buckle straps and a felted olecranon strap with a hole in the center are added as shown in Figure 5. The entire splint is lined with felt, which should extend one-half inch beyond the metal on all edges. The diamond shape formed by a pair of traction levers with the opposed edges of the cuff caused this splint to become known as the "diamond splint." Under this name, various models of the splint have been used in several of the army hospitals.

The light model shown in Figure 7 is made of vulcanite fiber. A still simpler model, the cuffs of which are attached to each side bar by one rivet only, is now being tried out. The cuffs of this model, being free to swing, adjust themselves perfectly to the surface of the limb. The model maintains its adjustment with one strap only, the olecranon strap. It is chiefly useful for extension. Long traction levers on any of these splints are unnecessary. Far more force than is therapeutically practicable may be exerted through short levers. Lightness, simplicity and sightliness are significant factors in securing the results from appliances in ambulatory cases. It is in the effort to have all of these essentials in the highest practicable degree that the various models have been developed.

FOREARM SPLINT FOR SUPINATION OR PRONATION

For maintaining the forearm in any desired degree of rotation, we use the splint shown in Figure 8. A paddle-shaped sheet of tin, 6 inches wide at the palm, 4 inches wide at the elbow and 16 inches long, turned down along all edges, makes the forearm piece. A piece of strap iron, one-eighth by one-half by 17 inches, is riveted down the center so as to project 2½ inches at the elbow end. A 5½ by 7 inch sheet of tin, rounded at the corners and bent into a semicylinder 5½ inches long, forms the arm piece. Strap iron, one-eighth by one-half by 7 inches, is riveted down the center, projecting 1½ inches. The free ends of the two pieces of strap iron, joined by a rivet, make the elbow hinge. The arm cuff can swing from one side to the other of the forearm piece, so that the splint may be used for either arm. An adjustable strap prevents the applied splint from swinging to the point of full extension of

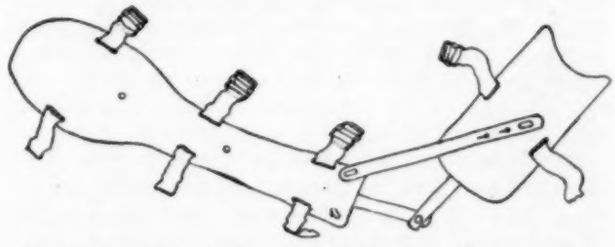

Fig. 8.—Forearm supination splint for use on either arm, adjusted for neutral rotation.

the arm, as in that position the splint no longer controls forearm rotation. The palm of the hand is next the forearm piece. The strap iron is twisted to get the desired degree of rotation. Any degree of wrist cock-up is secured by bending the hand piece. This splint is efficient but somewhat clumsy and unsightly. Effort is being made to perfect a better appliance.

Feeblemindedness.—There is no panacea for feeblemindedness. There will always be mentally defective persons in the population of every state and country. The program for meeting the needs of these persons must be as flexible and complex as the problem itself.—W. E. Fernald, *Mental Hygiene*, October, 1919.

THE MOULAGE AS A RECORD EMPLOYED AT THE ARMY MEDICAL MUSEUM *

J. FRANK WALLIS, M.D.
WASHINGTON, D. C.

Medical institutions in Europe are famous for their wonderful collections of reproductions in wax of dermatologic lesions and pathologic conditions, and for their models of embryology, histology and anatomy.

The great educational value of these artistic records has long been appreciated by Americans who have taken graduate medical courses in these foreign clinics. All who have studied abroad remember the great assistance these models have afforded, and return with regret that their own country lacks this impressive manner of teaching.

America has awakened; she has gradually unfolded until she now stands equal with the world of nations. To hold this lofty position which she has acquired she must prove herself equal to teach the science of medicine as she has taught the world her prowess in war and industrial achievement.

To make her medical course complete, the art of illustration is essential. Max Brödel and his pupils have demonstrated the value of medical illustration to literature, and the realistic moulage is necessary to complete the teaching of the medical sciences.

The art of wax modeling should be taught in our universities. Every large medical clinic should have a modeler on its staff, to reproduce the usual and the unusual pathologic states. All large cities are rich in clinical material that can be recorded and made available to the medical student and the graduate.

A course in wax modeling should include a brief study of histology, pathology and anatomy as an aid in reproducing the various structures in their normal and abnormal conditions. The technic required in making the uncolored wax model is quickly learned, but accurate coloring will depend on the interpretation of the surface markings of the wax positive. This course should also include a study of the chemistry of pigment and its durability, the association of color with disease and its diagnostic value, the memory of color, the taking of color notes and sketches, and the application of color to the surface of the wax.

Many physicians have artistic ability and will rapidly acquire a knowledge of the various steps necessary in the production of a moulage. To them, it is hoped, this short paper may be of assistance, as it briefly outlines the method now in use in the Army Medical Museum in Washington, D. C.

A moulage or wax model of the skin and underlying structures must truthfully represent a map of the topographic structures of the normal tissues and their pathologic states. It must be a positive in wax, unaltered by tooling or handling.

The negative or plaster mold is the matrix from which the wax impression is obtained. The plaster negative bears the same truthful relations as does the negative film in photography.

The wax impression must possess all of the delicate tracings of the normal skin as well as those of the altering or destructive processes of disease. An uncolored wax positive or impression is translatable to those who are familiar with the histology and pathology of the skin.

The formation of a wax model is divided into four steps: (1) negative plaster impression; (2) positive wax impression; (3) mounting, and (4) coloring.

The first step comprises the preparation of the patient and selection of the field from which may be reproduced the lesion or lesions, and in which there will be sufficient evidence of landmarks to indicate the location of the eruptions.

The preparation of the patient consists in placing the subject in the most comfortable position necessary to expose the field of operation. Papers are placed on the floor to collect particles of plaster; towels are spread to cover bedding or clothing; the part is shaved if it exhibits much hair, and the lesion is cleansed of exudate. A dam is now built around the area selected. The most satisfactory material for this purpose is made by saturating gauze or cheesecloth in a thin mixture of plaster of Paris and water. The dam should extend about 1½ inches above the surface of the skin. This method is very good, as it reinforces the edge of the cast and thus eliminates the possibility of breakage in the transport of molds. The method we now employ is to use wet towels as a dam. When the plaster is poured on the towel, it leaves an impression of the fabric which is reproduced in wax, affording reinforcement as well as an attractive border.

When the dam is formed, the surface of the skin and the lesions is oiled with a thin oil. This is done to prevent particles of plaster from adhering to the skin or hair on removal of the cast. When a distinctly hairy region is to be cast, such as the head, bearded face, axilla or the pubic region, petrolatum is a good medium to clump the hairs together. These are then smoothed down and a thin oil applied as on any other surface.

All is then ready for the mixing of the plaster of Paris. This is to be prepared after the dam is built and the parts oiled; otherwise, the mixture would harden before it could be used. The plaster of Paris is sifted into a basin half full of cold water until the saturated plaster fills the basin within an eighth of an inch from the surface of the water. The mixture is gently stirred to drive off the air, and this produces an even combination, free from lumps.

The plaster must be of a consistency approximating whipped cream in order to insure a fine impression. After the proper consistency is obtained by stirring or by adding plaster of Paris gradually and in small quantities, the mixture is applied with a scoop, large spoon or cup. The plaster is first poured around the edges, then on the surface, and last on the lesion or wound. A fine impression is obtained if the plaster is blown with the mouth as it is being distributed. This also eliminates the possibility of bubbles, which often spoil the impression.

The mound is now built up evenly to about the height of 1 inch, and strips of burlap dipped in plaster are placed over the cast. The burlap prevents the cast from breaking if the plaster should happen to crack while it is setting. The mold is now formed and allowed to set about fifteen minutes. The absorption of water by the plaster causes heat to be radiated. When the mold feels warm to the touch, it can be removed with safety, as the chemical action of the plaster and water has then taken place.

* Read before the Section on Dermatology at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

Various areas of the body require special technic so that precautions are necessary to insure a good mold, free from cracks and imperfections.

The greatest difficulty comes in avoiding undercuts. These usually occur in casting angular, rounded or irregular surfaces when making a one piece mold. Two piece molds should be avoided unless the distribution of the eruption requires it; even then, two distinct models mounted on a single board would be more desirable, as for example, in instances of eruptions on the dorsal and palmar surfaces of the hand.

Casts of the face are best made in one piece molds. The dam is built the same as for any other part of the body. Eyebrows are well greased with petrolatum, and the hair well smoothed down in the natural direction of growth. The eyelashes should be treated in the same manner. It is often advisable to cover the eyelids with cigaret paper. Rubber tubing should be placed in the nostrils, and cotton plugs in the ears.

Molds of the chest and of the abdomen should not be taken at the same time on account of respiratory movements. Any slight movement on the part of the patient will crack the cast. Cracks are often unavoidable in molds of this kind; but unless very large, they will not be conspicuous in the finished model.

The procedure of taking a plaster cast is not painful, even in the most sensitive lesions. The only discomfort will be caused by the pulling of hair along with the cast.

When molds of deep wounds are taken, the plaster and all utensils should be sterilized with dry heat by being baked in an oven for an hour. The most important precaution necessary to insure a good mold is to use a good grade of plaster.

The wax impression or model is made by pouring melted wax into the plaster mold. After this is colored and mounted, we have the finished model, which should bear an exact resemblance to the original as regards shape, color and surface markings.

It must be remembered that before making a wax model from a mold the plaster cast should be soaked in water for from twelve to twenty-four hours, until it becomes entirely saturated and free from air. After being taken out of the water it should be thoroughly dried with absorbent cotton.

The wax material is composed of: white beeswax, 2 pounds; paraffiin, 1½ pounds; starch, 1 pound; talcum powder, 1 pound, and yellow beeswax, 2 ounces.

The white beeswax and the paraffin are first heated on a water bath until entirely melted, when the starch and talcum powder are slowly added through a fine sieve. When the powders are entirely submerged, the mixture is stirred gently and allowed to remain over the fire for about an hour, with occasional stirring. The yellow beeswax is added to give the mixture the proper color.

This wax combination is now poured into the plaster cast and quickly shaken, so that it will cover rapidly the entire surface, without lines or streaks. The remaining wax is then poured back into the boiler, and the process is repeated until the proper thickness is obtained, usually about one-quarter inch. The wax is allowed to cool, from five to ten minutes generally being sufficient for this purpose, before being removed from the mold. The wax impression should be removed with great care and immersed in cold water.

Care must be taken during all of the processes from now on, so as not to mar the model with the warm hands or to allow it to come in contact with anything but wet cotton. The impression, as now made, must be kept perfect, otherwise the model is of no value. As a precaution, it is advisable to wear wet cotton gloves while working with the model.

The method of mounting models at the Army Medical Museum has a distinct advantage over the old method used by some artists. The linen draping is eliminated, as it does not add attraction. The small tacks which were used to attach the model to the baseboard are responsible for the cracked models and offer frail support to the specimen.

To mount the model, bolts are screwed into blocks of wood, are embedded in the reverse side of the model, and are held by nuts to the baseboard. The baseboard is selected from well seasoned wood. To prevent the board from warping, cross strips are inserted at both ends of the board. This precaution is necessary, as the slightest warping might crack the model. After the model is safely mounted, it is ready for coloring.

Pure colors in oil, free from opaques, are absolutely necessary for wax. The surface of the wax impression after leaving the plaster cast is receptive to color. All good, permanent, transparent colors are satisfactory, and the accuracy of reproduction is dependent on the skill of the artist.

The wax model can be adapted to illustrate pathologic conditions in the deeper structures of the thorax and abdomen, lesions in the brain and spinal cord, and in various organs. The field for the pathologic moulage is unlimited and is of extreme value in recording unusual mortuary findings as well as in providing the usual teaching specimens for the student.

When we review the various lesions of tuberculosis and syphilis and their selected territorial invasions, we can appreciate the advantage of permanent records, accurate as to color and structure, over the transient specimen often imperfectly mounted in its preserving fluid in the museum jar. Reproductions in wax of the various types of pneumonia would be of great educational value. Models of surgical anatomy and stages of operations would be of much value to the surgeon, as well as to the medical student.

The Army Medical Museum is now building a collection that will surpass any ever produced in the foreign clinics. Every medical man in this country is going to be interested in the American collection, and many will contribute to its formation and receive honorable mention in our National Museum.

To establish this American collection it is necessary for physicians and clinicians in American cities to cooperate with the museum in obtaining material of interest. This material can be easily gathered if plaster molds of all interesting lesions, rare skin diseases or pathologic findings, with photographs, are sent to the curator of the Army Medical Museum. With the aid of Congress in appropriation of sufficient money to carry on our work, and with a staff of well trained artists, we would accumulate rapidly a fine collection of usual and unusual dermatologic and pathologic models.

The day will come when it will be possible to visit our Army Medical Museum in our national capital and study diseased conditions in its various phases, and leave with the conviction that medicine can be taught in America and can be learned without visiting the well known clinics in European cities.

ABSTRACT OF DISCUSSION

DR. WILLIAM ALLEN PUSEY, Chicago: I would like to express my appreciation of the work which Dr. Wallis has undertaken. The only large collection of models that has ever been made is the collection in Paris made by Beretta. There is no doubt that good models are the best illustrations of the diseases of the skin which we can have, and I think the work that Dr. Wallis has initiated is one that we should support. Dr. Wallis is a trained dermatologist and he is self-sacrificing enough to take up this work. It has been started under the auspices of the army and it is to be hoped that the army will continue to support the work. If it does, it will in time have a collection that will be worthy of pilgrimages from all over the country, and that will be a source of reputation to the institution that possesses it. There is great room for such a thing in this country. Every medical school that undertakes to teach skin diseases should have a collection of the common diseases. If Dr. Wallis can only develop that work he will be doing a benefit to the dermatologists of the entire country.

DR. J. FRANK WALLIS, Washington, D. C.: I appreciate the interest you have taken in this work. It was largely accidental. I started to carry out the work and then we found that men who were interested in dermatology were expected to make models, but the work was very slow and was given up. I did very little with it until a year ago when I made a model, very quietly, of a case of pityriasis rosea that was developing into a psoriasis. Another dermatologist had also seen the case before I saw it. I made a model of it and it was seen by my commanding officer, but instead of being court-martialed I was sent to Washington and I have been there for a year having a good time. I enjoy it and if I can do anything to help others I shall be glad to do it. America has never had any modeling and I shall be very happy to help carry out the work.

LATE RESULTS OF SUPPOSEDLY SUCCESSFUL ABDOMINAL OPERATIONS ON THE DIGESTIVE TRACT*

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When one contemplates the marvelous change in the past twenty years in our knowledge of the diseases of the digestive apparatus and honestly tries to analyze what has been the fundamental cause of this change—this metamorphosis from poverty of method and uncertainty of result to our present wealth of diagnostic data and successful therapy—I feel that we must admit that it is to the surgeon and to the physiologist that this great change is mainly due.

The use of the stomach tube has been an aid, and the more refined and newer methods of studying gastric and intestinal secretions have proved of interest; but an attempt to evolve a gastro-intestinal pathology fundamentally on the basis of secretory variations is to lean on a frail reed—and in the stomach the secretory findings must be regarded as but general indexes of the tendency of the functional digestive act rather than as exact expressions of discrete pathologic entities—one of the many clinical data which does not furnish the answer itself but which adds its little to the many other aids at our command at reaching a true conception of the underlying disease process.

From the physiologist we have learned a great deal. The work of Pawlow and his followers, of Bayliss and Starling and of Cannon has shown us that there is order, not chaos, in the physiology of digestion in both motor and secretory spheres, and has furnished us with normal standards of inestimable value in studying the changes in the various digestive functions due to disease.

But, after all, it is the development of modern surgical technic with its concomitant ability to explore safely and carefully—not disturbed by the factors of time or of pain or of possible infection—the abdominal cavity in its various diseased conditions that has been the fons et origo of our modern knowledge of the pathology of digestion, furnishing us a real comparison of clinical signs and symptoms with definite pathologic changes—both gross and microscopic—a true necropsy in vivo. There is no clinician who is not eager to render to the surgeon full credit for the marvelous increase in our knowledge of the diseases of the digestive tract.

So many of the organic lesions of the stomach and intestine are fundamentally surgical—the results, especially the early results of surgical treatment have been so brilliant—that there has arisen in the minds of most patients, many clinicians and more than a few surgeons the idea that the knife is the sole therapeutic agent of value in this field. Yet, especially within the past few years, there has been a growing feeling that although a condition may be fundamentally surgical, nevertheless, the limitations of surgical method may be such that sequelae may develop which nullify the good effects of the primary operation: and there has been a noticeable lessening of enthusiasm for the surgical treatment of organic gastro-intestinal lesions, notably, of course, those of a chronic nature, for obviously in the severe acute lesions such as acute appendicitis, perforated gastric ulcer, repeated attacks of gallstone colic, empyema of the gallbladder and acute intestinal obstruction, immediate surgery is the one and only safe mode of treatment.

Why is this? There can be but one answer, and that is, that notwithstanding the brilliant early results of surgery in most of the acute and many of the chronic digestive lesions there is a realization that the late results in these cases are often far from ideal, and that the second state of the patient may be no better and even worse than the first, owing to postoperative adhesions or partial obstruction with a recurrence of the same or the development of new symptoms or other causes.

In this short paper I wish to discuss very briefly some of the factors that play a part in this connection, to make certain suggestions as regards postoperative treatment from the point of view of the clinician, and to try to suggest certain principles in the treatment of the chronic abdominal lesions which may, if followed, be likely to produce the minimal percentage of failure.

METHODS OF AVOIDING COMPLICATIONS

Let us then, in the first place, discuss methods by means of which the aftermath of inevitable abdominal operations may be as free from complications as possible—taking up, in turn, operations on the stomach, on the gallbladder, and on the intestine, these conclusions being based on the careful study of operative treatment and its sequelae in many hundreds of cases during the past ten years. After all, it is to the internist rather than to the surgeon that the patient returns if the results of operation are not so successful as

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expected—or often as promised. It is, in fact, the skilled clinician who should in the chronic—not the acute—conditions be the final judge as to whether treatment should be medical with its accessory dietetic and physical aids, or surgical; although even now the clinician's hand is often forced by the patient's insistence on the apparently quicker surgical route, although in our experience this enthusiasm for surgery on the part of the laity is very markedly less than it was five or even three years ago, obviously because there is a gradually dawning realization that, after all, surgery is a two edged sword, and is not omnipotent in the prevention of postoperative adhesions or a catarrhal intestinal condition which may nullify partly, or in whole, the success of the operation per se.

In deciding on the relative value of surgical and nonsurgical treatment, we feel that the tendency has been far too great to rush into surgery without giving other means a fair and honest trial. Our feeling is that the more acute the need for immediate surgery, the more clean-cut the picture, the more likely the success, both immediate and later, of surgical treatment.

There are many conditions, as, for example, chronic appendicitis, various forms of abdominal adhesions, as those associated with chronic appendicitis, former attacks of gastric or duodenal ulcer, pericholecystitis, as well as that large and evergrowing group of postoperative adhesions in which the tendency has been to operate—especially on the part of the patient, and the clinician, and when the surgeon is often by far the most reluctant of the three, in which surgery should be resorted to only as a last resort—for in this group of cases we have the greatest chance, even with the best postoperative care, of the formation of new adhesions with the reappearance of the old or other symptoms. No one who has studied this group of cases thoroughly can have failed to note that there are certain individuals in whom adhesions are peculiarly likely to form, however rigorous the operative technic.

On the other hand, it is in this group of cases that the functional and organic are so exquisitely blended in the production of symptoms that it would take a veritable magician to determine beforehand the relative rôle played by each in the production of symptoms.

Rest—that most potent of all medicaments in gastrointestinal therapy; elimination of foci of infection; local heat or cold; posture; supports; an appropriate diet, sometimes soothing, sometimes stimulating; massage; exercises; medicines, antispasmodic, lubricating, tonic, oil instillations; irrigations—all of these should be tried conscientiously before one thinks of surgical treatment, for these are the cases that test the stuff of which the physician is made; if he realizes that, to get results by medical and physical means, time is essential, that the patient, while being encouraged, should be made to realize that improvement must, of necessity, be slow, possibly taking many weeks, oftener months; and if he can get a real appreciation on the part of the patient of the underlying principles of the treatment and his hearty cooperation in carrying it out, then he will, indeed, be able to get good and often brilliant results in this most difficult group of cases, and to realize that, after all, the organic, which is fundamentally surgical, we freely admit, was playing but a minor rôle, or possibly no part, in the causation of symptoms, and that by correcting the functional disturbances associated with it the patient became so nearly well that he was unconscious, or almost so, that any organic lesion was present.

Again, operation is advised in many cases on a wrong conception of the underlying process—notably that enormous group of cases of so-called chronic appendicitis associated with high grades of visceroptosis in which the patient and physician both believe that removal of the appendix will be followed by a complete cessation of symptoms, when in reality such a belief is chimerical to say the least, as the chronincally diseased appendix represents but one phase of a diffuse low grade peritonitis involving the terminal ileum, cecum and ascending colon, and frequently pelvic organs as well. These are the cases, extremely numerous, in which a realization of this fact and absence of surgical treatment will save the patient and the physician from disappointment and heartache.

Another point of great importance in cases in which surgery is obviously necessary as, notably, callous ulcer with true obstruction (although even here it is well to try first the effect of nonirritating diet, local heat, rest and antispasmodic and alkaline treatment to determine the relative rôle of functional spasm and true organic obstruction in the production of symptoms); ulcer with repeated hemorrhages or intractable to the ordinary therapeutic procedures; gallbladder disease, either obviously surgical from the first or in which conscientious treatment along other lines has proved unavailing—a point of fundamental importance is the choice of the proper operation. I feel very strongly, for instance, that a gastroenterostomy, whether with and even more so without pyloric resection, is fundamentally unphysiologic in that an acid, unchymified mass is projected without the benefit of true sphincter control into a portion of intestine designed only to receive alkaline semiliquid chyme, and that even with the utmost postoperative dietetic care it is almost impossible to avoid a certain amount of jejunal irritation, to which, of course, must be added the possibilities of the regurgitation of duodenal contents or even a true vicious circle in those cases in which the pylorus is left patent. We have followed the subsequent history of many of these cases, and we feel, as did Mathieu, from his series of more than thirty years, that in practically all cases there is to be found some form of digestive disturbance, usually intestinal.

Whenever possible I believe that a pyloroplasty or even a Polya operation should be performed in preference, as these, especially the former, far more closely approximate normal physiologic conditions.

In cases of gallbladder disease, my feeling has been that in the majority of cases, in my experience at least, a cholecystectomy, even with its slight possibility of refractory duodenitis and diarrhea, is more productive of good results than a cholecystotomy, while obviously far less likely to be followed by a return of gallbladder symptoms or by malignant changes.

In cases of gastric carcinoma I have always felt that far too many patients are operated on, when the abdomen is simply opened and closed, merely to confirm a palpably obvious diagnosis, but that if an operation is performed, far too few surgeons are willing to make extensive resections in the one hope of really pro-

ducing radical improvement. In fact, for many years my feeling has been that surgery of the chronic lesions of the upper right quadrant has been so likely to have an unsatisfactory aftermath that I have been delaying operation further and further and trying other forms of treatment longer and longer, sometimes with almost complete or partial success, oftener, I am free to admit, with final recourse to surgery after all.

As for extensive resection of the bowel, my feeling is that in the vast majority of these cases, absolute failure is the usual ultimate outcome; and in my experience, the only cases in which even partial success has been obtained are those in which the resection is only of a limited portion of intestine, notably from terminal ileum to beginning transverse colon which, after all, in the majority of cases is that portion most likely to show real pathologic changes.

POSTOPERATIVE TREATMENT

As regards postoperative treatment in abdominal surgery, I feel very strongly that a far closer association between surgeon and clinician is essential to get the best results for the patient. The surgeon is not trained in dietetics; he is singularly prone to follow a routine in the postoperative management of his cases, and this lack of individualization is often productive of deplorable results.

For instance, in cases of reflex hyperacidity and pylorospasm secondary to a diseased appendix, the gastric symptoms persist long after the appendix is removed, and a nonirritating diet with alkalis and antispasmodics may be necessary for many weeks. Yet, how often do we find our patients eating salads and acids on the fifth or sixth day because they were told by the surgeon that "the only trouble was with the appendix, and they could eat anything now that it had been removed."

Also, to my way of thinking, every case of major operation on the stomach—gastro-enterostomy, resection, pyloroplasty or Polya operation—should be treated *exactly* like an acute gastric ulcer. I am convinced by the study of a great many cases that by a carefully and slowly graded dietetic therapy, from a few days of absolute starvation, through many days of nonirritating liquid diet in small amounts, to many weeks of a bland, soft diet, a great many, if not all, of the discouraging sequelae of these operations could be avoided; for I am sure that the tendency of the vast majority of surgeons is to feed these patients too soon and too much.

A third point of great importance, I believe, is the advisability—I was almost going to say the necessity—of every clinician's attending every operation in his cases of digestive disease. In the first place, it is of incomparable value in demonstrating the correctness or incorrectness of his diagnosis, and, in the latter case, of suggesting to him the cause of his mistake; in the second place, it should make him realize the difficulties which confront the surgeon in so many of these cases, and, in the chronic group of which I have spoken so often, should accentuate the advisability of further treatment by medical, dietetic and physical means before having recourse to surgery; while in the third place his presence at the operation should suggest to the surgeon the wisdom of utilizing his clinical experience both at the operation and in the management of the postoperative period.

Of course, the most important of all is the installation of proper postoperative measures to minimize that bugbear of surgeon, clinician and patient, the formation of postoperative adhesions. I have followed this group of cases for many years and have made many hundreds of fluoroscopic studies of them, always, of course, studying the patients in both prone and upright positions, and I am convinced beyond peradventure that a great deal can be done by measures designed to prevent stasis of intestinal contents and of the intestine itself. Admitting perfect surgical technic with the closing in of all raw surfaces, as far as possible, the postoperative treatment should consist of frequent change of position in most cases, or sometimes with especially localized adhesions, a special position, such as elevated foot of bed or head of bed, or lying on one side or the other, with free purgation as early as possible, repeated very frequently, and, as soon as the incision warrants it, deep abdominal massage, to be kept up for several weeks.

I am absolutely convinced that by a persistence in these measures, adhesion formation, while not abolished, is reduced to a minimum, just as I am convinced that the leaving within the abdominal cavity of oil, salt solution or solution of sodium citrate or the hypodermic administration of fibrolysin is valueless in this connection.

If a perfect operation for diseases of the stomach and intestine had been devised there would be no need for a paper such as this; but there is no ideal abdominal operation. In all, even with perfect technic, adhesions are not only possible, but probable. In many cases, such as gastro-enterostomy or cholecystectomy, an unphysiologic condition is produced. In others, such as pyloroplasty, pyloric resection, Polya operation, especially if retrocolic but even with a long anterior loop, closure due to adhesions, or changes in the omental fat with partial or complete obstruction and the necessity of a secondary operation may occur, while the value of a gastro-enterostomy may be nullified by the development of a vicious circle, by the subsequent closure of the new orifice or by subsequent development of ulcer.

I realize that I have offered in this article thoughts which have occurred to many surgeons and clinicians, especially those interested chiefly in digestive diseases, and that most that I have said is but a series of truisms. But it has seemed to me that such a general presentation is more likely to do good than a careful statistical study, although my conclusions are based on a study of many hundreds of postoperative cases through a long series of years and on personal attendance at several thousand abdominal operations.

When we realize the cases of late failure, each of us has seen after surgical treatment, as, for example, jejunal ulcer or jejunitis; vicious circle, or recurrence of old ulcer symptoms after gastro-enterostomy; postoperative adhesions, here, as well as in pyloroplasty, Polya, or other operations for resection of the stomach with partial obstruction and sometimes need of a secondary operation; adhesions; duodenitis; return of calculi or infection after gallbladder operations; adhesions after appendix operations or persistence of symptoms notwithstanding the removal of the appendix, due to unrecognized trouble elsewhere; extensive adhesions after partial or complete resections of the bowel, or the formation of new adhesions after opera-

tion for old adhesions, I feel that I am, indeed, justified in calling attention to this group of cases in the hope that some means of lessening the failures may be formulated.

CONCLUSIONS

The conclusions that have come to me from these many years of intensive study of this peculiarly difficult yet wonderfully interesting field are, in summary:

1. The surgeon has been too prone to believe in the success of treatment of abdominal lesions because of the brilliant success of surgery for acute abdominal conditions and to the apparent early cure of many chronic conditions when, however, some of the improvement must be ascribed to rest, careful nursing, change of environment, diet, and the other adjuncts to successful hospital treatment. If, after a few months, there is a return of the same or the development of new symptoms, the surgeon is often not cognizant of them, for it is to the clinician and not to the surgeon that the patient is likely to return with his complaints.

2. Some failures are to be ascribed to a definitely wrong appreciation of the real underlying pathologic process, as notably in the case of the so-called chronic appendicitis met with in cases of visceroptosis of marked degree and of long standing; and here the operation falls into the same category as that of many cases of fixation of the kidney, or suspension of the uterus, in which symptoms are ascribed to these abnormalities quite out of proportion to their true pathologic significance.

3. In many cases, partial or complete failure may be converted into partial or complete success by a clearer conception on the part of the surgeon of the underlying pathologic physiology, for in none of these abdominal lesions is it safe to rely on the correction of the morphologic changes done. Without a realization of the associated and often quite persistent functional disturbances, what should be a successful operation is often a failure. A proper diet determined in each case individually; the utilization of posture, purgation and massage to minimize adhesion formation; the choice of medication appropriate to the motor and secretory disturbances associated with the organic lesion—all these measures add immensely to the chance of a successful issue in this group of cases. While the clinician is unquestionably too prone to ascribe too much to functional disturbances, the surgeon, on the other hand, is far too likely to be guided by morphologic changes alone, and it is only by a proper balance between these two in our conception of the disease process and its consequent therapy—surgical and medical—that the optimum result can be obtained.

4. There is far too great a tendency to plunge too soon into surgery in the treatment of chronic and subacute abdominal conditions, and far too little enthusiasm for persistence in medical, dietetic and physical therapy in these cases before having recourse to surgery. Until methods have been devised absolutely to eliminate adhesion formation or operations evolved which can absolutely duplicate the normal physiology —if not the normal anatomy—of the various abdominal viscera, surgery should not be our first choice but should be the *dernier ressort*, only to be employed if skilfully directed therapy along nonsurgical lines has been tried conscientiously and over a sufficiently long period of time to prove that it is absolutely unavailing.

5. And this, after all, is really the motif of this paper: Real success in this most difficult field can only be obtained by a far closer rapprochement between surgeon and clinician: the internist should be present at every operation on his patients; the surgeon will be able to compare operative findings and preoperative clinical data, and the clinician's advice should be of help to the surgeon in the choice of the operative procedure. On the other hand, the visual demonstration of the pathology of the disease to the clinician should be of inestimable value to him in his future study of similar syndromes; the clinician with his knowledge of the previous functional digestive disturbances of his patient should cooperate with the surgeon in the management of the postoperative and convalescent period, and with his greater training along these lines, should direct the diet, medication and physical therapy, always, of course, in collaboration with his surgical confrère. The clinician, on the other hand, should keep the surgeon posted as to the subsequent history of the patient, and, if symptoms do recur, should not neglect, either through forgetfulness or tenderheartedness, to notify the surgeon of the fact. For, after all, the object of each is the same—to bring health to the patient—and it is only by far closer cooperation and a far greater appreciation on the part of each of the rôle that the other should play in the management of this group of cases that we shall be able to reduce to the irreducible minimum the failures—a really appalling number in toto—in cases which have been regarded as successful examples of the surgical treatment of abdominal diseases but whose subsequent histories—often altogether unknown to the surgeon—absolutely nullify this belief.

ABSTRACT OF DISCUSSION

Dr. John A. Lichty, Pittsburgh: The physician has noticed the shortcomings of surgical procedure for a long time, and the surgeon himself is aware of his shortcomings. A few years ago a surgeon called attention to the unsatisfactory results from surgical procedure, in gastro-intestinal diseases particularly, and was recommending methods by which this could be overcome, such as regulation as to who should and who should not operate, etc. It will not be decided in that way. It will be decided in a coming together, as Dr. Brown suggests, of the physicians and the surgeons, and a more close cooperation. I noticed in my own work for a number of years a class of cases diagnosed secondarily as "postoperative cases." At first they were few in number, but about six years ago I began to collate and tabulate these cases. Of about 6,000 patients, 348 had the so-called postoperative symptoms. The patient was asked whether the symptoms were the same as they had been before the operation, and when the answer was affirmative, it was called a "postoperative" case. Among those 348 cases there were 150 cases of operations for appendicitis, gallbladder disease, peptic ulcer, etc. I was rather surprised at this. I thought there would be more cases of gastro-intestinal tract disease. Then I began to look over my own cases, because for some patients I had advised operation, and they came back with poor results. Most of these cases were very early gastroenterotomies. A patient who was operated on for gastric ulcer alone, without any other indications, was worse after than before operation. We do not see very many of these cases any more because surgeons will not operate for a pure, simple, gastric or duodenal ulcer unless some other conditions are associated, such as intense, uncontrollable hemorrhage, perforation, or pyloric obstruction, or where it is decided that the patient cannot follow out his ordinary occupation under medical treatment. The other cases were

gallbladder cases. In those cases we usually found that the difficulty was that the pathology which had occurred in the biliary tract was of such a nature that surgery could not be expected to cure it. You could drain the gallbladder or remove it, and yet you did not cure the patient. The conclusion which I would like to present, together with Dr. Brown's conclusion, is that surgery is not a panacea. Some of these conditions cannot be cured by the best surgery. When the surgeon stops saying that he can cure all patients simply because he can operate, and will put himself on a plane with the clinician, who usually recognizes his limitations, I believe we will have fewer of these cases. The one class of cases which gave me the most trouble was that in which there was a button-hole incision for "chronic appendicitis," a small in the right lower abdomen, only about one inch long, with the evidence of only one suture having been inserted.

DR. ALFRED A. STRAUSS, Chicago: Medical men will turn their patients with appendicitis or a diseased gallbladder over to the surgeon for removal of the offending organ, but they will stand beside the operator and see him perform a simple gastroenterostomy for relief of a gastric or duodenal ulcer without an attempt to excise the ulcer. The same pathologic and surgical principles that hold good for the removal of the diseased gallbladder and appendix should hold good for removal of the ulcer. Many surgeons claim that gastroenterostomy alone cures the ulcer because less food passes over it and the regurgitation of bile into the stomach alkalinizes the secretions, but no one has ever proved that bile cures the ulcers or that the regurgitation actually takes place to any extent, except in a vicious circle, and the idea is contrary to all information we have as to the physiology of the flow of bile from the liver into the duodenum. Realizing the ineffectiveness of simple gastroenterostomy for gastric and duodenal ulcers, I devised plastic operations both on the stomach and duodenum whereby those portions of the stomach may be reconstructed after excision of the ulcer by fascial transplants. If the ulcer is on the stomach side, as, for instance, in an ulcer of the lesser curvature, an additional plastic operation is performed on the pyloric sphincter by cutting a small portion of the ring sphincter away, without incising the mucosa. This allows the stomach to empty very rapidly, in from one and one-half to two hours, and is far more effective than a gastroenterostomy. It takes less time and requires less surgical skill and leaves the stomach and duodenum in their normal anatomical physical relationship. So far as the hyperacidity is concerned, we have learned by the fractional test meal in cases where the ulcer has been excised that these patients have a normal acidity within a short time after operation, although a marked hyperacidity was present before operation. This must be interpreted to mean that the hyperacidity is the result of the ulcer and not that the ulcer is caused by the hyperacidity. Duodenal ulcers that cannot be excised should be closed off by means of a fascial transplant plus gastroenterostomy. I agree with Dr. Brown that the patient should be guarded carefully by the medical man after operation, but one thing is positive: if the pathology, namely the ulcer, is excised, the patient will need far less medical treatment than if the ulcer is permitted to remain.

DR. JULIUS FRIEDENWALD, Baltimore: I am very interested in Dr. Brown's paper because I have been following the results of operation for many years. In 1915, Dr. Finney and I collected our pyloroplasty and gastro-enterostomy cases and compared the results of both operations. We found that in our gastro-enterostomy cases 82 per cent. were immediately satisfactory, while of the pyloroplastic cases 90 per cent. were immediately successful. Of the gastro-enterostomy cases followed during the first year after operation the results were satisfactory in 84 per cent. of the cases, while in the cases of pyloroplasty the results were entirely satisfactory in 93 per cent. The end results after five years in the gastro-enterostomy cases showed 77 per cent. satisfactory results, while the pyloroplasty cases presented 88 per cent. of satisfactory results. These figures demonstrate that while the immediate effect of an operation may be exceedingly satisfactory, the final results may not be nearly as satisfactory.

DR. ROBERT H. ROSE, New York: The truth is we hoped for too much from surgery. We got to the point where we expected an operation to cure the patient absolutely. Sometimes it did, sometimes it could not. I believe surgery often does more than we have a right to expect. I had a case of appendicitis with a good deal of cecal stasis. Appendectomy was performed. The operation had no effect on the stasis. In a similar case appendectomy cured constipation and stasis. We really have no right to expect appendectomy to cure cecal stasis. Appendicitis has its effect on motility, and where there is intestinal inflammation it will always or practically always disturb motility. Now, in a case of a cecal stasis, appendectomy may help the stasis because it does away with a certain amount of interference with the normal motility. It is effective when dilatation is not extreme. But it is not going to reduce the caliber of that portion of the intestine to any great extent. It will improve motility and tone. It will help evacuation. Then if we continue to follow up the case, as we should, we may be able to reduce the stasis of the cecum still further. No one treatment will cure all cases, and when we talk as if surgery could, it shows that we have expected too much of it. What surgery does not do, the gastro-enterologists ought to be able to do in some other way, and I think we can nearly always accomplish it if we follow up our cases. When surgery is indicated, other methods fail. I know it is proverbially true that surgeons know very little about diet, and they are very much inclined to overfeed patients after operations.

DR. HARRIS WEINSTEIN, New York: The surgeon has come in for well deserved criticism for postoperative failures in operations on the digestive tract, but I would ask the medical man what he can accomplish by medical treatment in organic, or, for that matter, in functional gastro-intestinal diseases. I would like to hear any man indicate the treatment for gastric or duodenal ulcer, or for chronic appendicitis, that would be effective or permanent. While we relieve symptoms, the relief is but temporary, lasting from three months to one year. If we are very fortunate it might last a little longer, but the symptoms are bound to return. There is not a method of medical treatment in chronic appendicitis that is effective, and sooner or later the appendix will have to be removed. If you do not get it out sooner, you will regret it when compelled to remove it later. Recurrence of distressing gastric symptoms after appendectomy emphasizes the inefficiency of surgery in these cases, but we have nothing better to offer. In operations for gastric or duodenal ulcer, the tendency is either to operate without proper regard for indications, or to have recourse to a compromise operation, gastro-enterostomy, which disturbs the normal physiology of the stomach and does not remove the dangers from complications. Hence the many postoperative failures, which, in my estimation, are far above the accepted 15 or 20 per cent. Resections are generally shunned by the surgeon for good or bad reasons.

DR. G. A. FRIEDMAN, New York: Dr. Brown's paper is a very important one, but his suggestion that surgeons and medical men should get together and come to definite conclusions is of little value, because we do not know what the etiology of these conditions is, and that is the reason why the medical man does not succeed with medical treatment and the surgeon does succeed with the knife. I pointed out last year that gastric and duodenal ulcer is due to a constitutional disturbance, and no matter what the end results, the organic lesion is removed but the constitutional disturbance, which is the cause of the ulcer, remains with the patient. That is the reason why many of the patients return unimproved. In the first years of my practice I was very enthusiastic about surgery. I sent practically every patient for operation, and the majority of them returned unimproved. When I found hyperacidity before the operation, I found it later, and the roentgen-ray findings were identical with those found before operation. This shows that all the conditions are not due to the ulcer, but it is possible that the nervous element, the functional disturbance, leads to the

ulcer; and, therefore, assuming that the medical man does not succeed with treatment and sends some patients to the surgeon, it is not because he is sure the operation will cure the patient, but because there is a limit at the present time to medical treatment. There is a strict indication for operation only in the cases where there is obstruction. Operations for ulcers are somewhat discredited by the public. I do not agree with Dr. Strauss that the hyperacidity is the cause of ulcer. If that were so we would have hyperacidity only with ulcer. We have hyperacidity in so many other conditions that one cannot absolutely consider the hyperacidity as the cause of ulcer. Hyperacidity is only a coincidence in ulcer.

Dr. Henry Illoway, New York: This is the most remarkable surgical paper I have heard in a long time—remarkable in that it takes up the matter of the many postoperative recurrences, and seeks to find the reasons therefor. I believe it will do more for the advancement of gastro-intestinal surgery than many of the more elaborate papers on this subject that have been presented hitherto. He says that the after treatment of the patient is of the utmost importance. This is certainly true, more especially so as far as the diet is concerned. After the patient has been operated on and has recovered, he is sent out with the information that he is entirely well now, and that all restrictions on his eating and drinking are removed. It is in these cases that we have the postoperative recurrences. It is not the fault of the surgeons. The operations have been made skilfully, but the same causes that brought on the trouble originally have brought it on again. I do not look on gastric diseases, cancer, tuberculosis, syphilis (the latter two of rarest occurrence) excepted, either as infections or as constitutional diseases. They all have a local origin. The stomach is neither a leather nor a rubber bag. It is a highly organized organ of flesh and blood. It has most important physiologic functions, and has certain capacities, and if these are overtaxed, trouble ensues. If the surgeon will tell the patient on whom he has operated, assuming that the operation was performed with the necessary skill, and the wound well healed, what he must do and what he must avoid to keep well, he will not have any postoperative recurrences. As to gastro-enterostomies, I have been opposed to them for a number of years. I have never seen any benefit from a gastro-enterostomy that could not have been obtained as well by other measures of treatment. In several cases that have come under my observation, the patients have been much worse than before the operation. Only in cases of cancer where the days of the patient are numbered and where the conditions are frequently such as to make any other operation extra-hazardous, do I advise a gastro-enterostomy. Otherwise, I hold that an excision of the pylorus after some fashion is the operation to be preferred. With regard to ulcer of the stomach, I believe that with proper treatment the patient can be cured without an operation. Ulcer is not a constitutional disturbance, but a local ailment produced by a local cause. The hyperacidity produces the ulcer. The acid secreted by the stomach is the strongest of acids, and if you will take into consideration the patient's habits of life you will find ample cause for the hyperacidity and for the ulcer. Correct what is wrong, and you will cure your patient.

Dr. Byron C. Darling, New York: I did not hear enough about the influence of infection as the cause of ulcers and some of these other conditions mentioned. Focal infection has taken a great deal of our attention in the last few years and if it is what it is said to be it must be considered in a routine way in the preparation and treatment of all these cases. Rosenow has done what seems to be very complete and thorough work and proved that the streptococcus originating from the oral abscesses either at the apices of the teeth, from root infection, or from the tonsils, is the cause of duodenal and gastric ulcers; and it is said by other men to be the cause of various functional disturbances. If this is true it should be brought into the routine treatment of the case, and I would like to ask Dr. Brown whether they have gone into this matter thoroughly, whether they have had satisfactory results, and what he thinks of the matter in general.

Thomas R. Brown, Baltimore: I am not one of those who have yet been convinced of the efficiency of the streptococcus in the development of gastro-intestinal ulcers. This is really very much more than a surgical or medical paper. It is a plea in recognition of the fact that the more acute the thing and the more striking the symptoms, the more successful the surgery. That is the reason, entirely contrary to the consensus of medical opinion expressed here, my experience with gastro-enterostomy has not been bad in some cases. In cases of high obstruction, when other forms of exploration were impossible and gastro-enterostomy has been done to relieve it, the results have been very good, and I do fear that the condemnation of gastro-enterostomy is wrong. My plea is that it should only be done in cases where it is absolutely necessary. One, at least, of the good results of gastro-enterostomy is due to the regurgitation of acid contents in the stomach. I think that point has been made enough of, but I believe it is a specially fundamental point. Another point of great fundamental interest, in regard to Dr. Friedenwald's series, is perhaps that some percentage of the series depends on the choice of the surgeon. It is really a question of what not to do. I have been connected with Dr. Finney for many years, he has done a great many operations for me, and he has convinced me more and more that every year he does a little bit better, even though he has an enormous experience, because he knows what to leave undone. After all, the object of the paper is to call attention to the fact that where we have to do the operation in chronic conditions surgery is a two-edged saw. If we could help and bring back a normal physiology, if not a normal anatomy of the gastro-intestinal tract in the first place, and if we could devise means by which postoperative adhesions could be averted, surgery would be absolutely the treatment for every one of these cases. It is just because we cannot duplicate normal physiology that we do have a probability of adhesions and a probability of recurrence of these other symptoms. It is for this reason that the result is unsatisfactory in the chronic group. It is for this reason that it seems a timely moment to bring together in a very broad way the surgeons and the clinicians, not criticizing the surgeons, nor criticizing the clinicians, but criticizing the clinician much more than the surgeon, because it is very much more the surgeon's hand that is forced by the clinician in the chronic condition. It is just the broad general principle that two people, clinician and surgeon, one trained in one line and one in another, ought both to apply their best energies to the treatment of these chronic cases.

Plague and the Rat.—Some connection between plague and rats or mice has been repeatedly noted since the time mentioned in I Samuel, IV, and VI, when "the mice marred the land," and at the same time the people were smitten with "tumours." In the eighteenth century, in Yunnan, China, is the record that "in the day time, strange rats appeared in the house and lying down on the ground perished with blood spitting. There was not a man escaped the instantaneous death after being infected with the miasma." Probably one of the oldest references to plague in rats is that contained in the Bhâgavata Purana, one of the most important, and perhaps one of the most ancient of the sacred Hindu writings. The people are instructed to quit their houses and go elsewhere as soon as they observe that "rats fall from the roofs above, jump about and die." These instructions are followed in many parts of India to this day. When the plague prevailed in India, in 1611-1618, rats and mice seem to have been affected by the disease. During the great plague of London in 1665, it was feared that rats and mice might be the means of spreading the infection. DeFoe writes, "All possible endeavours were used to destroy the mice and rats, especially the latter . . . and a prodigious multitude of them were also destroyed." (He also says that they tried to kill off all the dogs and cats.)—Clemow, "The Georgraphy of Disease."

THE PHYSICAL AND ECONOMIC BENEFITS OF TREATMENT FOR HOOKWORM DISEASE *

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SAN JOSÉ, COSTA RICA

A campaign for the relief and control of any disease, to be effective, must result not only in a reduction of morbidity, mortality and suffering, but likewise in a monetary saving to the individual and the community. For more than two years we wished to demonstrate to the government and people of Costa Rica the economic value of the campaign for the relief and control of hookworm disease that was being carried on in that republic. But it was impossible to do this because we had worked in but few areas in which accurate data as to wages were available, and in these few areas sufficient time had not elapsed after the people had been examined and treated for a satisfactory comparison to be made of their earning capacities before and after treatment.

Lately, however, we have had opportunity to make a detailed analysis of the earning capacities before and after treatment of 320 patients cured of hookworm disease on the estates of Rodeo (located in the canton of Mora, province of San Jose) and Aquiares (canton of Turrialba, province of Cartago). These are representative estates on which conditions are neither better nor worse than the average. They are situated, the first on the Atlantic, the second on the Pacific, slope of the country, in the midst of rich agricultural regions. The owners of these estates, always interested in the welfare of their people, insisted that they should be examined for hookworm disease, and be treated and cured if found infected.

Rodeo lies partly in the central tableland of Costa Rica, and partly on the Pacific slope, at an altitude of about 2,000 feet. The climate is tropical. Sugar cane is cultivated, corn and beans are grown, and cattle are raised. The people live in poorly constructed wooden houses. They take their water for domestic purposes from creeks.

Aquiares is situated on the southern slope of Turrialba volcano, at an altitude of about 3,000 feet. The climate is moderately warm. Coffee, corn and beans are cultivated for export. The people live in well constructed, though neglected, wooden houses. Water for the homes is supplied by creeks and by an open ditch.

SUMMARY OF CAMPAIGN AND SURVEY

In the campaign of relief and control, conducted on Rodeo from September to December, 1916, 243 of the 263 persons living on the estate were examined, and 237, or 97.5 per cent., of those examined were found to be infected with hookworm disease. Two hundred and twenty-eight of the infected persons were treated one or more times, and 191 of them were eventually shown by microscopic reexamination to have been cured. To learn what effects the relief from hookworm infection had had on the general health and earning capacity of the workers on this estate, we went back and reexamined, during the period from June 4 to June 8, 1918, ninety-seven (or approximately one half) of the 191 persons who had been cured eighteen months earlier. Fourteen of them were found to have been reinfected—a reinfection rate of only 14.4 per cent. Not one of the homes on this estate was provided with a latrine when the campaign of relief and control began, and only 25.6 per cent. were so provided when it ended. At the time of the resurvey in 1918, the percentage of homes with latrines was only 30.2. All of these figures are shown in Table 1.

The first campaign of control on Aquiares was carried out during two periods, from June 5 to Dec. 22, 1916, and from July 6 to Dec. 20, 1917. There were then 822 workers on the farm, and 745 of them were examined. Infection was found in 447, or 60 per cent., of those examined. All but eighteen of those found infected received one or more treatments, and 334 of them were eventually shown by microscopic reexamination to have been cured. When we went back for our resurvey, between May 7 and May 20, 1918, we reexamined 223 of these 334 cured persons, and found that only nine of them had been reinfected since the close of our first campaign five months previously.

TABLE 1.—STATISTICAL SUMMARY OF CAMPAIGN AND SURVEY OF RODEO AND AQUIARES ESTATES

	Rodeo Estate				Aquiares Estate			
	Campaign of Relief and Control		Resurvey		Campaign of Relief and Control		Resurvey	
	No.	%	No.	%	No.	%	No.	%
Census of estate.....	263	....	..	.....	822	....	...	....
Examined for hookworm disease	243	92.4*	97	.....	745	90.6*	223	....
Found infected with hookworm disease .	237	97.5†	14	14.4†	447	60.0†	9	4.03†
Given treatment for hookworm disease .	228	96.2‡	..	.....	429	96.0‡	...	....
Cured of hookworm disease	191	83.8§	..	.....	334	77.9§	...	....
Houses on estate.....	43	.....	43	.....	152	.....	152	....
Houses with latrines:								
First inspection ...	0	0.0	13	30.2	7	4.6	76	50.0
Last inspection	11	25.6	13	30.2	76	50.0	76	50.0

* Percentage based on census.
† Percentage based on number examined.
‡ Percentage based on number found infected.
§ Percentage based on number given first treatment.

This gave a lower reinfection rate than that for Rodeo, being only 4.0 per cent. In the resurveys on both estates, three negative 2 by 3 inch microscope slides were required before any person was pronounced free of infection. On Aquiares, 4.6 per cent. of the homes were provided with latrine accommodation at the beginning of the campaign of relief and control. One half of the homes, however, had latrines when this campaign ended. This situation remained unchanged when the resurvey was made in May, 1918. The resurvey on both estates showed that the latrines that had been erected during the progress of the campaign were being maintained in satisfactory condition.

INCREASE IN HEMOGLOBIN

In the campaign of relief and control on Rodeo estate, the average percentage of hemoglobin among 185 of the infected persons before they were treated was but 42.1. Among 169 of these persons after they had been cured of hookworm disease, the average hemoglobin was 63.3 per cent. This is an increase of 21.1 per cent. In the resurvey the fourteen persons found reinfected had an average hemoglobin of 71 per cent., as compared with an average of 76.8 per cent. among the fifty persons who remained uninfected. The

* The studies described in this paper were made during the progress of a campaign for the relief and control of hookworm disease, conducted by the International Health Board of the Rockefeller Foundation and the government of Costa Rica.

resurvey figures for this estate suggest that the hemoglobin index continued to rise for a considerable period following the close of the regular campaign measures.

On Aquiares the hemoglobin index among 280 infected persons before treatment was 70 per cent.

TABLE 2.—HEMOGLOBIN INDEX OF INFECTED PERSONS BEFORE AND AFTER TREATMENT FOR HOOKWORM DISEASE

	Rodeo Estate				Aquiares Estate			
	Campaign of Relief and Control		Resurvey		Campaign of Relief and Control		Resurvey	
	Infected Persons before Being Treated	Infected Persons after Being Cured	Found Reinfected	Remaining Cured	Infected Persons before Being Treated	Infected Persons after Being Cured	Found Reinfected	Remaining Cured
1. Average percentage hemoglobin	42.1	63.3	71.0	76.8	70.0	78.9	73.3	79.7
2. Total persons examined	185	169	14	50	280	100	6	94

Among 100 of these persons after they had been cured, the average was 78.9 per cent. The resurvey figures indicate that the cured persons who were reinfected sustained a slight decrease in hemoglobin between the close of the campaign of relief and control and the date of the resurvey. In the resurvey, the persons found reinfected had an average hemoglobin index of 73.3, and those who remained cured an average of 79.7 per cent.—the latter slightly higher than the average of 78.9 per cent. established immediately after cure. All of these figures are summarized in Table 2.

INCREASE IN EARNING CAPACITY

In an effort to arrive at an accurate estimate of the increased earnings of the workers on the two plantations, the records of all persons remaining cured in the resurvey were carefully checked and all were excluded from consideration except those for men more than 18 years of age who had worked on the estates at least one year before the campaign of relief and control began, and at least six months after it ended. The

TABLE 3.—DAILY AND MONTHLY WAGES OF ESTATE LABORERS BEFORE AND AFTER BEING CURED OF HOOKWORM DISEASE

Rodeo Estate (31 workmen)	Average Monthly Earnings (Colones*)	Monthly Gain (Colones)	Average Daily Earnings (Colones)	Daily Gain (Colones)	Percentage of Increase in Earnings
Before treatment	43.66	....	1.68	....	....
Six months after treatment	50.06	6.40	1.92	0.24	14.6
Aquiares Estate (66 workmen)					
Before treatment	25.76	....	0.99	....	....
Six months after treatment	32.72	6.96	1.26	0.27	27.0

* A colon = $0.465.

gross earnings of these men during three selected months of 1916—before the campaign had opened—were then compared with their gross earnings during the same three months of 1917 or 1918—after it had closed. On Rodeo, the months of June, July and August were chosen; on Aquiares, those of February, March and April. In the case of the latter estate, the comparison was made between the wages for three months of 1916 and those for three months of 1918.

The data show that there was an increase in the earning capacity of the workers on Rodeo estate of 14.6 per cent., and on Aquiares of 27 per cent. The wages on Rodeo remained the same, while those on Aquiares were reduced 15 per cent. between the periods compared. On the latter estate there was, therefore, an increase of 42 per cent. in earning capacity if the 15 per cent. reduction in pay is taken into consideration. Detailed figures for wages during the periods before and after treatment for hookworm disease are given in Table 3.

INCREASE IN ACREAGE CULTIVATED

Larger areas have been cultivated and greater crops obtained since the workers were treated and cured of hookworm disease. On Aquiares, as Table 4 indicates, the acreage under coffee cultivation was increased 33 per cent. This has been accomplished without additional labor, and with a lower unit cost for cultivation.

During 1916, ten colones were paid for each manzana (1⅞ acres) cultivated, while at present 8.5 colones are paid, yet the worker receives higher compensation.

The table indicates also a considerable increase in the acreage devoted to corn cultivation. The estate donates to its workers small plots of ground for raising corn, with the understanding that the corn produced thereon may either be used by the laborers themselves or be disposed of to their profit. The increase in the

TABLE 4.—AREA CULTIVATED ON ONE ESTATE BEFORE AND AFTER TREATMENT OF LABORERS FOR HOOKWORM DISEASE (NUMBER OF LABORERS THE SAME ON BOTH OCCASIONS)

Crop	Area Cultivated (Manzanas) 1916	Area Cultivated (Manzanas) 1918	Percentage of Increase 1918 over 1916
Coffee	300	400	33.3
Corn	80	250	212.5
Beans	40	40	0.0
Pasture	182	200	9.9
Total	602	890	47.8

acreage devoted to corn cultivation therefore means that the workers are producing not only enough corn for their own consumption, but have some to export as well. The owners report that the net results of this, and of the higher wages the laborers are receiving, are a healthier, more contented, more permanent laboring force, earning more for themselves and producing more for their employers.

CONCLUSIONS

Although the life, labor and customs of the people living on these two estates do not differ from those that obtain generally throughout the country, and although every effort was exercised to guard against error in conducting the study, the number of cases considered is probably insufficient to justify the drawing of conclusions that will apply to whole territories. Nevertheless, the figures may be taken as pointing toward, if not as establishing, the following:

1. There is a permanent increase in hemoglobin as a result of treatment for hookworm disease.

2. On one farm, in spite of a 15 per cent. reduction in unit pay, the laborers earn 27 per cent. more. On another, where there has been no reduction in unit pay, they earn 14.6 per cent. more.

3. The owners of one farm are cultivating 33 per cent. more coffee with the same number of laborers, at a lower unit cost.

In addition to the benefits mentioned above, one estate reports a marked reduction in morbidity and in

infant mortality, and both estates report that the laborers spend less than formerly, or else spend nothing at all, for quack medicines and quack physicians to cure their infirmities.

FURTHER EXPERIENCES WITH THE STRING TEST *

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In several papers,[1] I have published numerous observations on the duodenal bucket and the value of the thread or string test. It is now about twelve years since my first paper on the duodenal bucket appeared. I thought it would be of interest to give you my experiences regarding the string test up to date.

Since the accuracy of the test will depend on the exactness of its performance I herewith give again a detailed description of this method.

METHOD OF USE

The patient swallows the duodenal bucket in the evening, late after supper, with a glass of water. The end of the thread is attached to the nightgown in such a manner that a length of from 30 to 32 inches from the lips can enter the digestive tract, and the bucket is allowed to travel by itself over night while the patient is asleep. In the morning before breakfast, it is slowly and carefully withdrawn by the physician. When the larynx is reached a resistance will be felt. This must not be overcome by forcible pulling, but the patient must be told to swallow, and during the act of deglutition the bucket may be easily withdrawn.

Before the bucket is removed, a knot must be made at the teeth in order to determine the length of the thread in the digestive tract. It is important that the patient should take no substances at supper that might cause a stain on the white silk thread resembling blood (as coffee, jellies, claret, etc.). It is also essential that the entire length of 30 inches should be within the digestive tract before the patient goes to bed.

After withdrawal of the bucket, the thread is immediately and carefully examined (1) for blood spots and (2) bile stains. Then the contents of the bucket are aspirated by means of a small pipet and likewise examined.

SIGNIFICANCE OF THE STRING TEST

The distance of the blood spots from the knot at the teeth will give the location of the ulcer. If the end, say the lower 4 to 8 inches, is stained a golden yellow, it will show that the bucket had passed the pylorus—provided the length of the thread in the digestive tract remaining white exceeds 22 inches—and that, therefore, the pylorus is permeable. (The distance from the teeth to the pylorus is on an average 22 inches.)

If the bucket has been in the duodenum, the contents are usually golden yellow, viscid and slightly alkaline. Sometimes, however, they may be acid and whitish, especially if the bucket has been only beyond the pylorus.

A blood stain in the neighborhood of 40 cm. (16 inches) points to an ulcer at the cardia; from 44 to 54 cm. (17½ to 21⅓ inches), ulcer of the lesser curvature; from 55 to 56 cm. (22 to 22⅓ inches), pylorus; 57 cm. (22½ inches) and more, ulcer in the duodenum. Two definite small blood stains near each other usually indicate the size of the ulcer, the spots being given by the margins of the ulcer.

If the string test is made several times, the results usually harmonize. Sometimes, however, there is a difference in the site of the brownish spot. This may be explained by the patient's involuntarily pulling the thread somewhat out of position during the process of washing and dressing. There is at times a very long brownish discoloration for a great distance. This need not correspond to the size of the ulcer, and can be easily explained by different parts of the thread coming into contact with the ulcer successively during the migration of the bucket through the pylorus and the duodenum. This is particularly noticed in malignant disease of the stomach, which as a rule presents fresh ulcerations.

The thread test appears to be of importance not only in the recognition of the position of the ulcer, but also as a criterion of the efficiency of our procedures, especially whether a cure has been accomplished or not. In those cases in which perfect healing of the ulcer has taken place, the test becomes negative.

In the diagnosis of cancer of the stomach, the thread test is of value in aiding us to recognize a suspected neoplasm before it is yet palpable. This is particularly the case in malignant affections of the cardia and the pylorus. In a case of cancer of the cardia, the bucket returned once filled with a piece of tissue of the tumor showing microscopically all the characteristics of a cancerous growth, while the thread above showed a blood stain. In several cases of neoplasm of the pylorus, the bucket did not pass beyond the pylorus and came back filled with a brownish fluid of a fetid odor, the thread being discolored brownish for quite a distance from the bucket.

The string showing no bile stain and having a length of 25 inches or more from the lips indicates the failure of the bucket to pass the pylorus. This may be due to either an organic stricture or a spasm of the pylorus. To decide this the test is repeated and atropin given. Absence of bile on the string in this second test seems to speak for a real pyloric stenosis.

EXPERIENCES IN PRIVATE PRACTICE

In reporting my experiences with regard to the string test in peptic ulcers I select the material of my private practice, as the figures are more definite. Moreover, the strings of all my private patients were kept as a record and are to be found in my collection. By far the greater majority examined with the string test had some symptoms of peptic ulcer, or belonged to that group in which there was a possibility of its existence.

All in all, 1,044 patients with suspicion of peptic ulcer were examined, with the string test, during the last eleven or twelve years. Of these, 481 showed a positive blood stain, while 563 were negative with regard to blood.

The location of the ulcer (according to the string test) and its distribution according to sex are presented in Table 1.

Cardiac ulcers show a greater percentage among the female sex (14 per cent.) than the male sex (6 per cent.). The reverse is found in duodenal ulcers,

* Read before the Section on Gastro-Enterology and Proctology at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

1. Einhorn, Max: A New Method of Estimating the Permeability of the Pylorus, New York M. J. 87: 1179-1182 (June 20) 1908; A New Method of Recognizing Ulcers of the Upper Digestive Tract and Localizing Them, M. Rec. 75: 549-552 (April 3) 1909; The Importance of the Thread Impregnation Test for the Recognition of Ulcers of the Upper Digestive Tract, M. Rec. March 18, 1911.

namely, greater frequency among men (37 per cent.) than among women (22 per cent.).

TABLE 1.—LOCATION OF THE ULCER AND ITS DISTRIBUTION AMONG THE SEXES

	Cardia (36-42)		Lesser Curvature (43-53)		Pylorus (54-55)		Duodenum (beyond 55)	
	No.	%	No.	%	No.	%	No.	%
Males.....	20	6	130	40	58	17	120	37
Females.....	22	14	69	47	26	17	32	22

Among 399 patients whose gastric juice had been examined and analyzed and a classification made into hyperacidity (60 and above) and subacidity (below 60), we find the results given in Table 2.

TABLE 2.—RELATION OF GASTRIC ACIDITY TO ULCER (POSITIVE STRING TEST) AMONG THREE HUNDRED AND NINETY-NINE PATIENTS WITH POSSIBLE ULCERS

	Hyperacidity					Subacidity				
		String Test					String Test			
	Total	Positive		Negative		Total	Positive		Negative	
	No.	No.	%	No.	%	No.	No.	%	No.	%
Males.....	181	135	76	46	24	80	40	50	40	50
Females.....	81	64	77	17	23	53	33	62	20	38

It is easily seen from this table that in both sexes among ulcer suspects with hyperacidity, the presence of ulcer is found more frequently than in those with subacidity.

What proofs have we that a positive string test indicates some form of ulceration?

From the figures given in the tables it is evident that among ulcer suspects we find the frequency and location of the blood stain harmonizing with the distribution of ulcer encountered in necropsies and in operations. The greater frequency of duodenal ulcer among men than women is, likewise, demonstrated by the string test. From a considerable experience I can say that, in the greatest majority of instances, patients with probable ulcer and a positive blood stain on the string do well when subjected to an ulcer cure. In a great many instances the roentgen-ray findings of a peptic ulcer tally almost exactly with the results of the string test. The same remark applies to operations on ulcer patients. To be sure, there are instances in which roentgen-ray signs are lacking, and in which, likewise, inspection and palpation of the stomach, at operation, from the outside fail to show anything definite with respect to an ulcer, in which the string test is distinctly positive. Here there are two possibilities: Either the blood stain is due to an extensive inflammatory process of the gastric mucosa, or—which is more probable—to a superficial ulcer.

I am aware of quite a few instances in which an operation failed to reveal any ulceration of the gastro-intestinal tract. These patients continud to suffer after the laparotomy just as much as before. The string having been positive for peptic ulcer, they were given duodenal alimentation and were completely relieved of their troubles.

CONCLUSIONS

In addition to the foregoing, my experiences with the string test on ward patients in the Lenox Hill and Post-Graduate Hospitals—which will equal if not exceed those of my private patients—justify the following conclusions:

The string test has proved itself extremely useful in the diagnosis of peptic ulcers and their location, also in demonstrating patency or stenosis of the pylorus. Frequently the existence of a gastroenterostomy opening and its proper functioning can, likewise, be made out by this method (the bile stain on the thread, then, usually beginning at 19 to 20 inches from the lips, instead of 23 to 24).

Of all the tests we employ in our routine examinations of patients afflicted with digestive disturbances the string is certainly of great, if not the greatest, importance. It frequently points the way to a correct diagnosis and a proper plan of treatment.

ABSTRACT OF DISCUSSION

Dr. Sidney K. Simon, New Orleans: Some years ago I made some tests on individuals in hospitals who had no gastric disturbance at all. I wanted to check up on digestively normal individuals the results that I had observed with the ulcer cases. With the kindness of my confréres I used for that purpose fifty individuals who happened to be in the hospital for some other disturbance, broken legs, and so forth. I made some very interesting observations with the string. Of those fifty individuals, twelve, or about 25 per cent., showed a distinct reaction on the string. The stain varied from a rather deep, blackish discoloration to mere streaks along the string, and the conclusions I came to in regard to these experiments were these: That the tautness of the string before pulling it out made quite a difference as to whether one would find a blood stain or not. If the string were allowed to pass into the intestinal tract, that is, the bucket more than thirty-three inches, it became so taut that on attempting to pull it out trauma was produced along the tract, either at the orifices of the stomach or in the esophagus, and we obtained a streaking of blood. The mere streaking of blood on the string amounts to nothing, practically. If one observes the restriction of not allowing the string to enter into the intestinal canal more than twenty-three inches from the incisor teeth, and will use ordinary precautions in pulling the bucket out with the string, I believe that the test has a great practical value. In another series of cases of demonstrable ulcers I found at least one half with blood stain. But the stain must be at a measured spot on the string that corresponds to the side of the ulcer; that is, with regard to the cardiac end or the pyloric end of the stomach. The stain must be a distinctly deep discoloration, not a mere streak of blood—but a deeply imprinted stain, and usually of a blackish color, and must measure some distance along the string which would correspond to the distance in the gastro-intestinal upper tract where the ulcer is suspected, either the esophagus or the pyloric end. Mere streaks of blood amount to nothing, and particularly if the bucket has been allowed to go into the intestinal tract farther than the thirty-three inches from the incisor teeth.

Dr. Clement R. Jones, Pittsburgh: I began to use the Einhorn test string quite a number of years ago, and I have used it routinely ever since that time. I have for a considerable time placed a great deal of confidence in the test. I think that the manner in which the test is used is very important, and I would like Dr. Einhorn, if he will, to tell us the exact character of the string he uses. I have experimented with different types of string and I believe that the character of the string has a good deal to do with some of the tests for blood in otherwise normal individuals. I also some time since ceased to use any weight on the string. The tension of the bucket, or whatever weight may be on the string, seemed to produce a sawing process in some cases which resulted in a stain that would not otherwise have been present, although that stain formed by the sawing is to the experienced observer not often mistaken for the larger stain of the ulcer. I believe that if this test is applied carefully with the string, with simply a knot on the end of the string, that knot being placed in a capsule and passed through the pylorus, we will get a more satisfactory result from the use of this test.

DR. I. O. PALEFSKI, New York: It is generally conceded that in a bleeding gastric or duodenal ulcer the thread may be positive. In many instances, however, the positive thread for ulcer cannot be corroborated by other clinical or roentgenographic evidence. Laparotomy in these cases, as a rule, reveals no ulcer. We observed two conditions which are particularly prone to show a positive thread although no ulcer is present: first, in periduodenal cholecystic adhesions, and, second in low stomachs with high pyloric limb. In the former, the mucosa at the point of the deviation or angulation of the duodenum, as a result of the periduodenal adhesions, is apt to become traumatized by the thread as a result of undue tension caused by the peristalic waves of the duodenum. In the latter condition the capsule of the string in its passage into the duodenum must assume, first, an upward direction and, second, on reaching the duodenum, a downward course with the point of tension at the pylorus. The conclusions reached by Dr. Einhorn are generally recognized among roentgenologists, although in the experience of Dr. Carman 90 per cent. of duodenal ulcers show a six hour gastric residue. One often finds hypermotility in the course of roentgenographic examination in conditions other than duodenal ulcer or gallbladder disease and, therefore, the phenomenon of hypermotility by itself can hardly be of diagnostic consideration. This is particularly true in gallbladder disease which usually shows no other roentgenographic evidence. It is not usual to find hypermotility in chronic appendicitis. Clinically, however, the predominating features of chronic gallbladder disease and chronic appendicitis are those of gastro-intestinal stasis. I do not believe that motility of the gastro-intestinal tract can be studied accurately with inert salts, such as barium sulphate or bismuth. A mixed meal as a motor test meal is preferable, as it more likely stimulates peristalsis and the digestive secretions. I have had the opportunity to examine a number of patients and was surprised to note the discrepancies occurring between opaque and mixed meals as motor test meals. Our present knowledge of the rate of evacuation of the gastro-intestinal tract under normal and pathologic conditions is still incomplete. The solution of the problem requires team work between the gastro-enterologist and the roentgenologist. It is conceivable, therefore, that in such conditions, the blood-stained thread may be the result of traumatism. In my opinion, a positive thread when unsubstantiated by other definite evidence of ulcer should receive no serious consideration.

DR. JULIUS FRIEDENWALD, Baltimore: I have used the Einhorn string test in many instances in suspected ulcers, and have always found it of considerable aid in diagnosis. The principal fact that I have observed, however, regarding it is that one should not rely on a single examination. Two or three tests should be made, and when the blood stain is precisely at the same distance at every examination I am convinced that it then presents definite evidences of ulceration. This method is also very useful in those instances in which the results of the roentgen-ray examination are indefinite, and yet the symptoms are positive of ulceration; in these instances the string test gives very valuable information as to whether there is an ulcer at hand or not.

DR. WILLIAM VAN V. HAYES, New York: I wish to confirm what has been said. The string test has been under fire from various sources and all sorts of absurd things have been done and wrong interpretations made. For instance, one man condemned it. He said he had found it positive in one or two cases, had operated and had found no ulcer. In my opinion that is an entirely wrong way to use the string. The string should be used to secure one item of evidence, one bit of corroboration of our diagnosis. As Dr. Freidenwald said, we should confirm it by two or three tests. If we get a definite stain at a definite point persistently present it means something. It does not necessarily mean a big indurated ulcer; it may mean a slight erosion; and I am not sure but that it some cases we get a stain where there is simply marked pyloric spasm or a definitely congested state of the mucous membrane. But the stain on the thread does indicate something which is pathologic. It may be an ulcer or it may be something that is much milder, but it is something that needs treatment. Personally, I do not feel satisfied in the handling of a case showing a definite stain until I have got rid of that stain. It seems to me that is the way we ought to use the test. One other point: In using this string test I have regularly employed No. 15 surgeon's twisted silk, as being a little softer than the braided silk, and, consequently, a little less apt to produce irritation of the mucous membrane. Also, I have used a little bead about an eighth of an inch in diameter, not having any great weight, and have then taken pains in withdrawing the thread not to use any force. If the bead catches, I simply wait until the spasm relaxes, and then gently withdraw the thread. Under these conditions we will usually get reliable results.

DR. MAX EINHORN, New York: With regard to the string, I usually use English braided silk, No. 5. That is the best, although you may use anything else. The string should not be much longer than thirty-three inches from the lips, entering. That is long enough to see whether there is anything or not. I use the bucket on the string. This is important in order to determine the permeability of the pylorus. If a certain length passes through (25 inches or more), and bile is seen on the end of the string, and then white above it, that bucket has entered the pylorus. The bucket is size 23, French, I think. You may use a larger or a smaller one, but it helps you to get an idea as to the permeability. In regard to the pulling: I have frequently seen cases where we encountered resistance. In such cases we should wait and not pull hard; wait a little and then pull again. But in some cases where there was a strong resistance I found that there was no stain at all, indicating that the pulling alone does not give a stain. If trauma were caused by the pulling of the string it would show a stain of fresh blood. But these stains are usually dark, as of something oozing out. There is a great difference between the two. With regard to the localization, I pay more attention to a small stain, especially two tiny little spots than to a big splashing stain. But a big stain does not indicate the size of the ulcer; it is caused by the movement of the string, coming in contact with different parts of that same area. We find that more frequently in malignant conditions than in benign conditions. On the whole, I can only repeat that the method is very useful in diagnosis.

CERTAIN LIMITATIONS OF ROENTGEN-RAY DIAGNOSIS OF GASTRO-INTESTINAL DISEASES*

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The roentgenologic diagnosis of gastro-intestinal diseases has been developed with such marvelous rapidity that a great degree of caution should be observed in directing attention at the present time to its seeming limitations. It must be conceded that roentgenology has put gastro-intestinal diagnosis on a new and sounder basis, changing to a great degree the current conception of the meaning of abdominal complaints and demonstrating some abnormalities with unerring accuracy which on the operating and necropsy table had usually been overlooked. Nevertheless, there are definite limitations to which this method can be stretched, and the very fact that so much reliance is now placed on it makes it desirable that these limitations be admitted and generally understood. The laity are actually coming to believe that a roentgenogram is a diagnosis and not, as we know very well,

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a source of data on which opinions may be expressed with the widest range of values.

The serious practical objection to the general use of the method in gastro-intestinal diagnosis is the expense it entails when properly carried out. Commercial roentgen-ray laboratories are springing up all over the country to meet the demand for work at moderate prices, but it is difficult to conceive how complete and satisfactory work can be offered to the charity patients except in highly endowed institutions. I myself am convinced that much of the time, incomplete and unsatisfactory technical work and inexperienced interpretation simply confuse the issue, and the patient would be far better off if reliance were placed on clinical and laboratory data and the results of exploratory laparotomy when apparently indicated.

It is not, however, to these limitations in the practical utility of the method to which we wish to direct attention, but rather to certain more fundamental limitations which depend on the difficulty or impossibility of demonstrating abdominal abnormalities by roentgenographic methods.

By roentgenographic examination we can visualize the shape, size, contour and position of the various parts of the gastro-intestinal tract when it is properly filled with opaque substances, and we can with reasonable accuracy roentgenograph the outlines of the liver, kidneys and urinary tract. The development of soft part detail work has progressed rapidly, but it must be admitted that we cannot visualize the changes in the structure of the abdominal organs. In recent years, attention has been largely centered on the recognition and treatment of the gross lesions of the abdominal viscera. Comparatively little progress has been made in the study of those visceral changes of a structural nature which are so obvious on the postmortem table and would seem to be of such great importance. The gastro-enterology of a decade or two ago has gone. We now appreciate the frequency and varied clinical pictures associated with gross organic lesions of the abdominal viscera. With the exclusion of these lesions made possible in the great majority of cases by systematic roentgenographic examination, we should be in a far better position to push the study of those disturbances of function and changes in structure on which this method can throw no direct light. *A negative roentgen-ray diagnosis of a gastro-intestinal lesion should never be regarded as final in the exclusion of gastro-intestinal disease.*

In the recognition of the gross abdominal lesions by roentgenographic methods there are also many difficulties and some impossibilities. In large part, it is true, these are failures or imperfections in technic and excusable fallability in roentgenographic interpretation.

The study of the esophagus by the fluoroscopic and roentgenographic method has been an important step in the clinical study of its abnormalities, but we must admit that the passage of the meal through the unobstructed esophagus is rapid and the filling too incomplete to make for satisfactory examination. Unfortunately, clinical symptoms are seldom complained of until obstruction takes place; but it is just as well that we bear in mind the danger of a negative diagnosis of esophageal lesion by roentgenographic methods. A negative examination calls for the use of all other methods when any symptoms are present. The differentiation of spasm from annular growth in the cardia is sometimes made with disastrous results. On the whole we should regard the roentgen ray as more distinctly an aid to other methods of diagnosis in esophageal work than in the diagnosis of disturbances in other parts of the gastro-intestinal tract, because it can be examined so directly with the esophagoscope.

The stomach is in many respects the most easily roentgenographed of all parts of the alimentary tube, and I believe that in only a small majority of cases will adequate fluoroscopic and plate studies fail to show a gross lesion. There are, however, certain stumbling blocks which must be reckoned with in every examination.

The cardiac end of the stomach with an ordinary opaque meal fills out poorly; and unless a suspicion is entertained of the infrequent lesion in this area, it will probably be overlooked. I feel that here is a definite place for the gastroscope in diagnosis when symptoms and findings suggest a lesion in this region.

Ulcer and cancer of the posterior wall of the stomach, unless large and encroaching on the curvatures, fail on the immediate plate to give definite filling defects. We have seen on two occasions symptoms of cancer which we later proved by operation to be of the posterior wall but which gave an absolutely normal series of plates taken immediately after the ingestion of the opaque meal. It is possible that the lesion might have shown on the two or four hour series.

Early annular growths in the pylorus are compatible with normal roentgenographic appearances, as has been demonstrated twice in my experience. Almost always by the time symptoms are present the presence of the growth is obvious on the plates.

There is a definite group of cases that resemble ulcer in history and laboratory findings while the roentgenographic examination is absolutely negative. While it is probable that some of these cases are not true gastric cases, there is a small number that I believe are unquestionably florid or mucosal ulcers of the stomach. Sometimes even these shallow superficial craters can be caught on the lesser curvature. We have seen such craters show at the first examination, then disappear with medical treatment, and later fail to show with a definite recurrence of symptoms. Positive roentgenographic evidence of ulcerative or indurative lesion of the stomach may contradict all other evidence, and negative evidence of a gastric lesion has some weight; but I feel that we should hesitate to accept a negative roentgenographic diagnosis of gastric lesion with a positive history and suggestive laboratory findings unless some other lesion is discovered as a possible cause of the clinical disability.

The roentgenographic determination as to whether a visualized lesion is active or healed is possible in many cases, particularly in the gastric side of the pylorus. Frequently we are left in much uncertainty as to the condition of the ulcer when the roentgenographic examination is repeated after the completion of the ulcer cure.

The differentiation between ulcer, cancer and syphilis may be made with a reasonable degree of certainty, particularly in the advanced case. Differentiation is by no means always easy, even on direct examination of the ulcer or mass. We have seen syphilis of the stomach cured by treatment give the same roentgenographic picture as cancer, and we do not believe it is ever safe to reach a differentiation solely on roentgenographic evidence.

With the development of technic, it is now possible to visualize gallstones in a large majority of cases; and frequently the chronic thickened gallbladder is definitely shown. All stones and all chronic gallbladders cannot at present be demonstrated. I cannot agree with those who contend that the gallbladder that can be visualized is a pathologic gallbladder, as we have seen such removed and found them normal. In view of the commonness of a pathologic condition of the gallbladder among those in middle life and beyond, a failure to show the condition even in 20 per cent. of cases is an important consideration, and shows the folly of making an absolutely negative diagnosis of a pathologic condition of the upper abdomen on roentgenographic examination.

The terminal ileum and cecum offer diagnostic difficulties of the most varied kinds. Persistent deformities are found to be of little consequence; anatomic peculiarities are mistaken for pathologic conditions. There are cases in which the evidence of a pathologic condition is too definite to be questioned; but, on the whole, I have come to regard the roentgenographic diagnosis of conditions in the right iliac fossa with considerable suspicion, insisting that a definite opinion should be expressed only when there is the most unmistakable, persistent evidence in support of the clinical picture.

The diagnosis of incompetency of the ileocecal valve can, of course, be made with certainty with the barium enema; but whether under such artificial conditions the phenomenon has clinical significance is extremely doubtful. The weak spot in the results from repair work on the valve is the fact that usually the chronic appendix is removed at the same time, and often definite constricting bands are freed.

The roentgenographic diagnosis of appendix has become popular in recent years, although it rests on a very insecure foundation of established fact. It may be made with reasonable certainty in the case showing definite evidence of deforming adhesions. The failure to fill or to empty when filled, even after several days, is entirely compatible with a normal appendix, as has been observed in my experience repeatedly. We have seen the appendix filled, curved, somewhat angulated and remain filled for ten days, and yet prove normal on removal. I cannot see that we are justified in accepting the statement so frequently heard that the appendix that fails to empty promptly or that is retrocecal is a dangerous appendix per se. As clinicians, we are not so much interested in whether the appendix is somewhat abnormal, but whether it is responsible for disability or is a source of danger from acute disease. The roentgenographic decision on these points is made difficult by the superficial opinions on the condition of the appendix expressed by the surgeon, and the failure to study after-results from the removal of the supposed chronic appendix. I am convinced that the after-results are very poor in those cases giving no history of definite acute attacks, and I believe that a positive or negative opinion of appendix disease on roentgenographic evidence should not to any great degree influence our judgment as to the desirability of appendectomy reached on clinical grounds.

The study of the colon is, on the whole, satisfactory, as it can so well be visualized by opaque meals and enemas and stereoscoped so accurately. We cannot expect the visualization of mucosal changes or the demonstration of growths projecting into the lumen without affecting the wall. The sigmoid and rectum are more difficult to study because of anatomic arrangements, the variations in the normal course and fixation. Small lesions can readily be missed, and a negative opinion of low ulcerative lesion should be guardedly made on roentgenographic examination.

The ideal form of roentgenographic examination of the gastro-intestinal tract resembles the complete necropsy which the pathologist approaches without bias in the effort to discover the exact condition of each part, and later perhaps correlate his findings with the disabilities observed during life. With a reasonable degree of positiveness, conclusions may be reached as to gross lesions of the abdominal organs by roentgenographic examination; but it must not be forgotten that the accuracy of these conclusions depends entirely on the pathologic knowledge, the experience and the scientific honesty of the interpreter, and due allowance must always be made for the limitations of the roentgenographic method of diagnosis.

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THE OPERABILITY OF CANCER OF THE STOMACH AS DETERMINED BY THE ROENTGEN RAY*

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An important diagnostic aid which can give much preoperative information with regard to operability of lesions of the stomach is the roentgen ray. It can demonstrate the size, the shape and the position of the stomach, important factors with which the surgeon has to reckon, as well as the size, the location and the extent of the lesion. It can show whether a stomach suspected of disease is normal, whether a tumor is present, and whether the tumor is intrinsic or extrinsic. The roentgenologist, by basing his judgment on the sum of knowledge gained from the roentgen ray, can point out whether a cancer or lesion of the stomach is operable or not, so far as the stomach is concerned; but it remains for the internist and the surgeon to advise operation and for the surgeon to decide on the kind of operation. The earlier the lesion is discovered, the less will be their quandary.

Without the use of the roentgen ray, a positive diagnosis of cancer of the stomach is often not made until cachexia, loss of weight, achlorhydria, obstruction, Oppler-Boas bacilli, and a palpable tumor are noted; these are all signs of advanced gastric cancer. The patient's fate depends too much on his physician's personal opinion and too little on the true but hidden conditions of the case. As many physicians have believed, and still believe, that the presence of a palpable tumor precludes operative relief, some patients whose lives might be prolonged by operation are not operated on. Others are subjected to useless exploratory laparotomies which roentgen-ray examination can prevent.

The roentgenologist does not look on this method of examination as independent or ultimate, as it is only one part of a thorough clinical examination, and the verdict of operability based on its findings is only of

* From the Section of Roentgenology, Mayo Clinic.
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relative value except in cases that are indisputably inoperable. The syndrome of early cases of cancer of the stomach is not sufficiently characteristic to differentiate it from that of other gastric diseases. Nor can a cellular diagnosis be made by the roentgen ray; but a filling defect may be shown which enables the roentgenologist to make a gross pathologic diagnosis in the majority of cases. An indication for operation should be recognized in the location and extent of the filling defect in the gastric contour, especially when we consider that 95 per cent. of all tumors of the stomach are cancerous. As metastasis and an extended lesion prevent operation in many more cases than does the location of the primary lesion, early diagnosis seems the surest preventive of a high gastric cancer mortality; the roentgen ray has often proved to be a means of diagnosis and of forecasting the operability of carcinoma of the stomach at a time when clinical symptoms are so slight as merely to hint at malignancy.

The eliminative value of the roentgen ray in gastric diagnosis applies to the healthy as well as to the diseased stomach. A roentgen-ray examination of patients who complain of such symptoms as indigestion and dyspepsia, conditions which are often manifestations of other gastric and extragastric disorders, may result in negative findings. The outline, size, shape and position of the stomach prove that the stomach is normal and only the victim of reflex disturbances which the roentgen ray may aid in finding. If the roentgen-ray examination reveals a tumor of the stomach, however, screen and plate findings should be studied with one purpose in mind—possible cure by operation. The chances for cure which the particular case possesses place it, according to the roentgen-ray evidence of operability, in one of three groups: operable, borderline or inoperable. The limits of each group are roughly marked by the roentgen divisions of the stomach: Group 1, tumors of the pars pylorica, the operable zone; Group 2, tumors of the pars media, the questionable or borderline zone, and Group 3, tumors of the pars cardiaca, the definitely inoperable zone.

OPERABLE TUMORS

In Group 1 are those tumors which are located in the pyloric end of the stomach; these are shown by the roentgen ray to be operable so far as the stomach is concerned. In this type are included those cases in which the lesion has not spread far on the stomach wall to the danger zone, the pars media (Fig. 1). As approximately 70 per cent. of all gastric cancers occur in the pyloric end of the stomach, and as about 95 per cent. of all lesions which encroach on the gastric lumen are carcinomatous, a lesion in the pyloric end should always make one strongly suspicious of malignancy. The character and size of the filling defect may also give some hint as to malignancy; but the question of malignancy which is of importance in considering the advisability of operation is of no importance from the standpoint of the possibility of operation; that depends on the amount of healthy stomach wall remaining. Often cases which present such severe symptoms clinically as to seem inoperable prove operable on roentgen-ray examination, for even a very large palpable tumor may be resected if it is confined to the lower half of the stomach. While a palpable tumor does not, therefore, prevent surgical intervention, it does mean that the lesion has existed for some time and that metastasis may be present. Free motility of the cancerous stomach favors resectability, but the signs which point to it may also be misleading. The filling defect may be atypical of cancer and the clinical symptoms alone may offer little explanation; but if the patient who has indefinite gastric symptoms has any filling defect in the contour of the stomach, whether typical or atypical of cancer, the chances are that a malignant growth is present (Fig. 2).

According to Deaver,[1] the importance of the roentgen ray rests on the demonstration of a surgical condition in the stomach, not on the power of differentiating the condition. It is true that it cannot in 100 per cent. of the cases differentiate between cancer and ulcer, and in the doubtful cases all other methods of differentiation must yield to exploratory incision and pathologic examination. This exploratory method of diagnosis was advocated by W. J. Mayo[2] twenty-one years ago. We know now, however, that the roentgen ray can detect the primary lesion in a very early stage, and if, as Deaver has stated in a recent article, almost half of the gastric cancers seem to have followed on ulcers, a lesion of the stomach cannot be too early discovered and looked on as potentially malignant. When the roentgen-ray examination shows a tumor in the pyloric third, the most accessible portion of the stomach, it is considered operable.

A lesion of the stomach can be pronounced operable, however, only with respect to the stomach, as perforation and metastasis almost invariably remain undiscovered until after incision. The clinician can prevent useless operations in some cases which are indicated as operable by the roentgen ray, as he can find metastasis to the rectal shelf, supraclavicular glands, umbilicus and the skin; ascites, when associated with a history of malignancy, is a fairly reliable index of inoperability. Gross metastasis to the lungs and bones is roentgenologically demonstrable, but it is so rare in cases of cancer of the stomach as to merit no more than mention in this brief discussion. Abdominal metastasis, the most frequent form, is a condition which neither the roentgen ray nor any other method of preoperative examination can discover and which the surgeon is unable to cope with, even when the tumor is in the most favorable location for resection (Fig. 3).

BORDERLINE TUMORS

The tumors of the second group are those which extend so far up on the stomach wall, into the questionable zone, that their resection becomes uncertain; they are classed as the borderline cases. These cases present the most puzzling problems of operability from a roentgenologic standpoint. Their removal depends, as in the cases of Group 1, on the possibility of metastasis, plus the judgment and skill of the surgeon. The position and size of the stomach may be a surgical drawback; the small high-lying stomach of the robust person offers much greater difficulty to the operator than does the relaxed stomach of the asthenic person. Therefore, if the roentgenologist is familiar with the surgeon's technic he can better form his decision as to the operability of the particular case than if he knows nothing of the operator's dexterity and willingness to attempt resection when the tumor lies in the border line zone of the stomach. The nearer the lesion approaches the cardiac zone, the more adept must be the surgeon in order to work high up under the costal

1. Deaver, J. B.: Early Recognition of Carcinoma of the Stomach, New York M. J. **109**: 749-751, 1919.
2. Mayo, W. J.: Observations upon the Diagnosis and Surgical Treatment of Certain Diseases of the Stomach, Based upon Personal Experience. M. Rec. **53**: 836-838, 1898.

arch and to remove just enough of the stomach as to leave it free from neoplasia (Fig. 4).

Tumors of the fundus which do not produce pyloric or cardiac obstruction, and which are not palpable

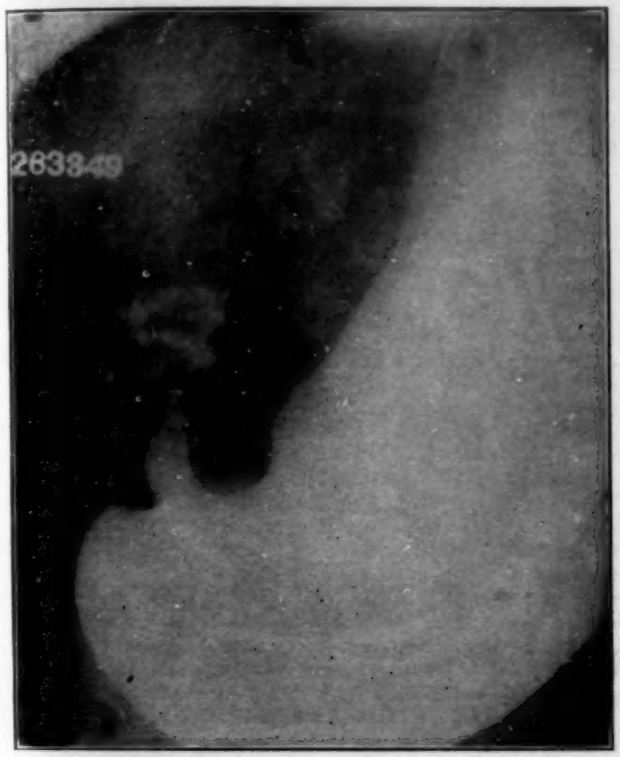

Fig. 1 (263349).—Filling defect and obstruction due to tumor of the pyloric end of the stomach. The irregularity corresponds to a palpable mass. The lesion is operable "so far as the stomach is concerned."

because of their high location, may exist for some time without causing much inconvenience; by the time clinical diagnosis is definite, they are usually inoperable. Also, when a tumor is in a questionable position with regard to operability, allowance must be made for the type of tumor and consequent type of invasion of the stomach wall. The fungoid carcinomas produce multiple irregular filling defects, and the real extent of the cancer is quite closely simulated by the roentgen shadow; while the scirrhous cancer produces a filling defect less gross which may gradually shade off and not picture the true limits of the disease. Even after allowing for an excess of involvement of a scirrhous cancer beyond that indicated, exploration may reveal inoperable conditions (Fig. 5). As free mobility of a cancerous stomach favors resectability, as fixation resulting from extension to adjacent organs makes successful intervention less probable, as cancer roentgenologically demonstrated as small may at operation be found to have invaded or become adherent to adjacent abdominal organs, and as metastasis may exist without detection by the roentgen ray, the roentgenologist is forced to make such a relative diagnosis of operability in the borderline group of cases that it might be called the exploratory group, for on the surgeon devolves the operative decision.

INOPERABLE TUMORS

In Group 3 are the cases of gastric tumors which are pointed out with finality by the roentgen ray as inoperable. The tumors of this group are located in the cardiac end of the stomach, or they have spread from a pyloric or fundal carcinoma to within this inoperable zone. Surgery can bring no relief to the patient when the cardiac end of the stomach is cancerous. The tumors in this region of the stomach are easily recognized by the roentgen ray as inoperable (Figs. 6 and 7).

Statistics of cancer of the stomach show an appalling number of inoperable cases, especially when it is considered that surgery may bring cure early in the course of the disease. The high fatality rate of cancer of the stomach may be largely attributed to too-late diagnosis.

VALUE OF THE ROENTGEN RAY

Of recent methods which have so far been adapted to discover the cancerous growth and to prophesy the chances for its removal, the roentgen-ray signs when correlated with clinical findings seem to be the most promising means by which operability may be increased through earlier diagnosis. So many seemingly benign lesions of the stomach prove to be malignant that the advisability of medical treatment instead of operation seems very questionable or even homicidal. Periodic roentgen-ray examinations in a suspected case can, of course, be made; but if instead of retrograde changes a filling defect typical of carcinoma is noted in time, attempted operation may be too late because of metastasis; the watchful waiting policy often proves not to have averted operation and perhaps to have been the only cause of the patient's early death from a malignant gastric tumor. Even though a growth may be very extensive, if it has not invaded the cardiac end of the stomach the patient should be given the chance of its successful removal through exploratory laparotomy, as some cancers evidently metastasize later than others. The exploratory incision is of little danger and it may be the means of finding a growth which has not quite reached the dividing line between operability

Fig. 2 (134942).—A small filling defect immediately prepyloric, with obstruction. No corresponding palpable mass. Lesion favorable for operation.

and inoperability, that is, when the dividing line represents metastasis.

When the testimony in favor of the roentgen ray is collected, we find, then, that its only decisive value in predicting the operability of carcinoma of the stomach

is its prevention of operation in inoperable cases. Its value in the borderline cases is limited to preoperative information with regard to the location and extent of the growth, and their significance for malignancy. In the first group, which includes the highest percentage

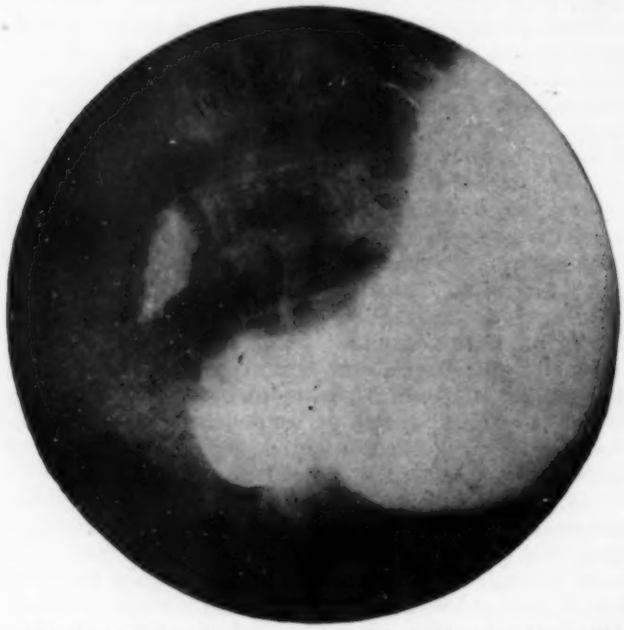

Fig. 3 (149635).—Filling defect with obstruction in the operable zone. The lesion was operable so far as the stomach was concerned, but proved to be inoperable because of metastasis found at operation.

of operable cases, the roentgen-ray diagnosis of operable so far as the stomach is concerned can be almost 100 per cent. diagnostically correct, while operability determined by metastatic conditions dwindles to about 50 per cent. As the likelihood of metastasis and the spread of the disease seem to increase with the age of the disease, it is an obvious corollary that many more patients could be successfully operated on if a diagnosis were made early.

Until all medical men and laymen realize the necessity of early examinations of all persons with any gastric complaint, the death rate from gastric cancer will remain high while the successful operability rate of carcinoma remains discouragingly low. Propaganda which will direct the public's attention to the dangers of disregarding gastric symptoms seems as justifiable and perhaps as necessary as the campaigns which have decreased the death rate of tuberculosis. In 1900 the mortality statistics[3] for all forms of tuberculosis were 201.9 for 100,000 population; in 1916 they had dropped to 141.6, more than 60 per cent. The death rate from cancer, of which gastric cancer is the most common form, rose in that time from 63 to 81.8 for 100,000 population, more than 18 per cent. These statistics have only a relative value, of course, but they do surely mean that the death rate from tuberculosis is lower than eight years ago, while the death rate from cancer is no lower despite the advance in surgical technic. Publicity through national and state public health departments which will lead persons who are suffering from chronic indigestion or dyspepsia, which are not diseases but only symptoms, to consult a physician, who will conduct a thorough examination, should be one of the means of raising the operability of cancer. In every such routine examination, no matter how slight the symptoms, a roentgen-ray examination should be included. The roentgen ray can now discover 95 per cent. of all gastric tumors, of which only about 50 per cent. are still in the operable stage. When routine examinations of persons presenting gastric symptoms have become a reality, the roentgen ray should be able to raise that percentage encouragingly, for the inoperable tumors should be practically only those which cannot be resected because of cardiac location, and carcinomas of the cardia represent a small percentage of gastric cancers.

3. United States Mortality Statistics, 1916, p. 20.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. ROBERTS AND CARMAN

Dr. George E. Pfahler, Philadelphia: I wish to emphasize the point that we must not depend on the roentgen ray alone for these diagnoses. I do not think that any first class roentgenologist ever asks that or expects that. I want all the evidence I can get in making the interpretations and in making the investigations, because if I have the evidence presented from the clinical standpoint I will investigate more thoroughly the part of the gastro-intestinal tract that is under suspicion, so as either to prove it normal or abnormal, and I do not like to make any report merely "negative." When I say normal, that only means normal from my roentgenologic standpoint; it does not mean that the organ is absolutely normal. I do not wish to convey any such impression. The next point that I want to emphasize is that an incomplete or careless examination by the roentgen ray is worse than none at all. An examination made by an incompetent roentgenologist, technician or commercial employee is frequently worse than nothing, especially in gastro-intestinal diseases. A man may make an interpretation of a fracture in almost any position and may show the line of fracture in the obvious cases, but in gastro-intestinal diseases we have movable organs to deal with; we have varying conditions present continually, so that a wide experience in interpretation is necessary if we want to avoid mis-

Fig. 4 (106837).—Gross filling defect extending into the questionable zone. Operability of tumors of this extent can be determined accurately only by an exploratory incision. The tumor was found to be inoperable because of posterior attachment.

takes. We know that it is the most valuable method we have of studying the gastro-intestinal tract. That does not mean that we must discard other methods. We must make investigations roentgenographically and fluoroscopically and then by careful interpretation we will make few mistakes.

With regard to the diagnosis of carcinoma of the stomach, if those cases are studied thoroughly few carcinomas will be overlooked. The fact that some man will try to diagnose all these lesions as carcinoma does not condemn the method. We cannot differentiate in the early cases between indurated ulcer and carcinoma. The microscope can

Fig. 5 (123017).—Filling defect of greater curvature involving the operable and questionable zones. Operability questionable so far as the stomach is concerned. Operation: sleeve-resection.

scarcely do it. The surgeon cannot do it when he gets it out on the table.

DR. JAMES T. CASE, Battle Creek, Mich.: Dr. Roberts will not find fault with me for disagreeing with him in some small details. I do not quite agree with him regarding the negative value or uselessness of the roentgen method in the study of the esophagus. With the esophagoscope, it is impossible to see deeper than the mucosa, and many of the early malignant lesions in the lower end of the esophagus are not first seen from the mucosal side. I have often found a spasm of the cardiac orifice in what later proved to be a carcinoma of the cardia, where the early roentgen sign was cardiac spasm. I am convinced that spasm of the esophagus is often an early sign of carcinoma, a finding which can be determined by means of the roentgen rays long before the esophagoscope can see the lesion. In regard to incompetency of the ileocecal valve, I think one of the doctor's statements is susceptible of criticism. He mentioned that the enema test of ileocecal valve incompetency is made under very abnormal conditions. Incompetency of the ileocecal valve as such is a matter of minor consequence. Cases which are pathologically significant are those in which there is a retrograde movement of ingested food from the cecum back into the ileum. This has been demonstrated in many of the severe cases where there were clinical symptoms which might be ascribed to the condition. The mere fact of ileocecal valve incompetency is not significant. It is an end-result, not an entity, not a primary thing, and there is just about as little justification for operating on the ileocecal valve alone as there is in removing the appendix in so-called chronic appendicitis and expecting this operation to cure the patient. Both ileocecal valve incompetency and the so-called chronic appendix are end-results of more far-reaching causes. We cannot shut our eyes to the fact that there are a large number of cases characterized by distention and distress in the lower abdomen accompanied by occasional cramps, with clinical evidence of ileac stasis, with nausea and the rest of the symptoms which we have felt were indicative of ileac stasis. In my experience, the more marked these symptoms, the more marked the incompetency of the ileocecal valve. I want to commend Dr. Roberts for his note of conservatism and to assure him that roentgenologists who take pride in their work and who are doing successful work will most heartily agree with him that the roentgen method is only one method of diagnosis and should by no means be set up as a unique method to be depended on by itself alone. As to Dr. Carman's excellent paper, I want to suggest just one thing—that perhaps the use of the word "resectable" might be more appropriate than the use of the word "operable."

DR. R. WALTER MILLS, St. Louis: It is difficult to discuss the papers of Dr. Carman and of Dr. Roberts; they are in keeping with the views of those of us who have been interested in this work. I may call attention to the stabilizing of gastro-intestinal roentgenology and certain things that Dr. Carman mentioned that forecast the future. Roentgenologist and clinician are met now for the first time on a common basis of efficiency. There is no question of the value of the roentgen ray. The trend of the meeting is along the line of the limitations of the roentgen ray, our own psychologic reaction to the overwhelming value of the thing. I should like to ask how many cases of nonobstructive operable cancer of the stomach medical men have diagnosed by clinical means. The roentgen ray has its limitations. We make mistakes but these mistakes diminish in direct proportion to the skill of the examiner. Gastro-intestinal roentgenology is not easy. One must become sensitized to it. Dr. Carman hits a strong blow in his education of the public to the symptoms of gastric cancer, and of course with the obvious outcome of routine complete roentgen-ray examination in all suspicious gastro-intestinal pictures. The real keynote is the education of the public in the same way we educate them in the matter of tuberculosis and carcinoma of the uterus. There is one sinister note against the success of the curing of the cancer of the stomach surgically. Many persons do not have symptoms sufficient to drive them to the physician until it is too late, and this we can never control. The difference in surgical skill is a tremendous factor in the treatment of gastric cancer.

DR. LOUIS J. HIRSCHMAN, Detroit: Speaking as a clinician, I wish to offer this: We must remember we are calling on

Fig. 6 (109449).—Tumor involving questionable and inoperable zones. A tumor in this location is indisputably inoperable.

the roentgenologist as a consultant, not as a man to take pictures, not as a man to give us a report as to examinations, but as a consultant, and we must consult with him in every sense of the word. The surgeon who does not spend a good part of his time in the roentgen laboratory with the roentgenologist, seeing, feeling and studying, is not going to be

of best service to his patient, no matter how much credence he places on the reports of the roentgenologist when he gets them. A man connected with a hospital or clinic who is fortunate to have a good roentgenologist associated with him does not need any advice along this line; but a great many

Fig. 7.—Tumor located in the inoperable zone. Operation is contraindicated in cases of this type.

men who are treating cases solely on the report they receive on paper as given by the roentgenologist are often led astray. It is not fair to the roentgenologist to expect him to give advice as a consultant as to the desirability of operation in a given case, and as to the operability of a given case. But if more team work were indulged in you will be a better surgeon and you are going to be better able to interpret his reports when he does give them to you. The point Dr. Roberts brings out about not placing too much credence on roentgen-ray examination is all very well. There are some operative procedures, particularly in the intestinal tract, where by the use of the roentgen ray we are able not only to decide whether or not a case is operable, but in a large measure to plan the operation. We must correlate our own clinical findings from every point of view with the result of our consultation with the roentgenologist, and we will be better able to plan our operations than we could do before.

Dr. Thomas R. Brown, Baltimore: Quite a few years ago it was said that no one could expect to make an early diagnosis of carcinoma; that we should be satisfied to make a late correct diagnosis. I want to call attention to a point I think is of fundamental importance. There are three clinical types, the one that develops the type of ulcer which should be of great importance; the second group in which the picture is so thick and aggravated in the late chronic dyspeptic, so that it is almost impossible to tell the transition and where generally it is too late; third, the classical type, with absoultely no preventive symptom as far as we know, where suddenly without warning there is a development in the digestive system. This group I am firmly convinced should be suspected as carcinoma. Clinical study plus the most careful roentgenologic study should give us results in most cases. I remember a great European physician once said that the careful, well trained clinician should make his diagnosis from the history; that the rest of his examination should be simply confirmatory, and this is the type of cases in which it is peculiarly applicable.

Dr. Anthony Bassler, New York: You cannot diagnose all abdominal conditions by the roentgen ray. So far as disturbances of sensation are concerned you cannot do anything with the roentgen ray, nor with catarrhal conditions, nor with toxemic conditions. My experience has been this: In esophageal conditions it is most helpful. As soon as one gets down in the stomach, depending on the roentgen ray alone, then there is an element of danger. This is increased in the small intestine and slightly only less so in the colon, and I think we should think of these as important in the matter of proportion of failures. In ethmoidal disease, and pretty nearly everything osseous the roentgen ray is of use. In soft tissue diagnosis it must be taken more in a confirmatory sense. But when it comes to early carcinoma of the stomach the only way you can diagnose it is with the roentgen ray.

Dr. Byron C. Darling, New York: The propaganda that Dr. Carman advocates brings up one sinister cloud, as suggested by Dr. Mills, and also by Dr. Roberts. The commercial laboratory is practicing medicine. Twenty-two different laboratories have opened up in New York City where you can get a written or oral diagnosis of stomach lesions and all sorts of other conditions. This is practicing medicine, because anybody who treats and diagnoses, and so forth, is practicing medicine. To take another point of view, the surgeons and physicians who are sending their patients to laymen are in a rather paradoxical position. The public appreciates the value of this method, and the physician submits a case to a layman for final, or at least, a help in his diagnosis. The patient presumably pays for those services either in a commercial laboratory or in a lay technician's office, or in a specialist's office; and if he pays for those services may he not be entitled to those services—to the judgment, to the experience of a trained medical man instead of a layman? Is it not compatible with fair and square dealing to submit your pertinent findings to the review of another medical man? Why not collaborate? Why not corroborate? This is a violation of the Medical Practice Act. This is a violation of caution and of safety.

THE ORTHOPEDIC SURGEON AND INDUSTRIAL ACCIDENTS*

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NEW YORK

My work during the past two years has served to bring into marked contrast the unusually expert care given by our military authorities to the treatment of gunshot injuries and the comparative lack of care bestowed on similar injuries occurring in the ordinary course of industry. The Surgeon-General's Office took

Fig. 1.—Contracture of the fourth and the fifth fingers, due to paralysis of the ulnar nerve. This deformity could have been prevented by the use of two small splints holding the fingers extended.

pains to give special courses, training men in orthopedic and surgical principles applicable to war injuries; a special commission has devoted itself exclusively to the perfection of splints; pamphlets have been issued, and a special department of education by means of photographs and moving pictures has been efficiently organized. As a result, the American wounded soldier

* Read before the Section on Orthopedic Surgery at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

has had far less to suffer than his comrade in arms, either of the allied or of the hostile armies.

Contrasted with this excellent organization, dealing with the complicated gunshot injuries, the treatment of which is peculiarly difficult owing to the suddenness with which military hospitals are inundated with huge numbers of injured, is the general lack of care and organization accorded the employee who suffers a comparatively simple type of injury. True, there are exceptional instances in which certain firms and insurance companies have organized their work in a systematic and effective way; but on the whole, and here I speak from my personal experience, I gain the impression that the care of those injured in industrial accidents, particularly in the early stages, is haphazard and is left to men of insufficient experience.

I shall confine my paper entirely to the orthopedic aspect of the situation. I shall deal, first, with the most usual mistakes in splinting; secondly, with some of the simpler types of appliance applicable to injuries of the upper extremity and thirdly, with some of the operations on nerve, tendon and bone, particularly useful in the operative treatment of industrial injuries.

COMMON MISTAKES IN SPLINTING

Ischemic gangrene following the application of a tight splint is a frequent source of trouble. The novice

Fig. 2.—Marked contracture of the thumb due to a wound of the thenar eminence. The contracture could have been prevented by splinting the thumb in the abducted position.

fails to realize that a plaster dressing, or in fact any firm dressing applied shortly after the accident, although a perfect fit at the time, rapidly becomes too tight, owing to the swelling of the extremity. Ischemia may occur within twenty-four hours, and when once present is extremely difficult to cure. A second mistake is the application of an unnecessarily large splint, which immobilizes joints unnecessarily. Patients with fractured clavicles are usually brought into the clinic with the entire extremity enveloped in the classical Velpeau dressing. Within two weeks, the metacarpophalangeal joints of a workman or workwoman over 50 are so stiffened by this unnecessary immobilization that weeks are required before they can be limbered up—a much longer time than it takes for the fractured bone to heal. The Colles fracture, too, is almost universally splinted with immobilization of the fingers. The surgeon seems oblivious of the fact that two short arm splints properly adjusted, with a little felt pad placed posteriorly over the inferior fragment and anteriorly over the proximal fragment, is amply sufficient to hold them in position.

A third group of mistakes includes even a larger number of cases: those in which no splint whatever is applied, although its use is more urgently indicated than in a fracture. To this group belong the numerous nerve injuries. Musculospiral paralysis is frequently treated by applying a sling in such a way as to increase the wrist drop. No attempt whatever is made to hold the hand in the "cock-up" position. Figure 1 illustrates the deformity subsequent to an injury of the ulnar nerve. The contraction of the fourth and fifth fingers could easily have been avoided by the use of appropriate measures. Figure 2 illustrates another type of

Fig. 3.—Contracture of the fourth and the fifth fingers due to a wound of the flexor sublimis digitorum muscle. At the right is shown the result of three weeks' intensive treatment in overcoming the contracture. This treatment would have been unnecessary had the fingers been properly splinted from the outset.

injury, a marked contracture of the thumb, due to neglect to splint the finger in the abducted position, and Figure 3, contracture of the fourth and fifth fingers due to an injury of the forearm, involving the flexor sublimis digitorum muscle. In each case, deformity could have been avoided and weeks of extensive treatment saved the patient and the insurance company, if sensible orthopedic measures had been instituted from the outset.

I want also to emphasize the danger of retaining any splint too long a time. No matter how good the splint, it will do damage if the joints are immobilized over an excessive period. This is well illustrated in Figure 4, showing an injury received in a railroad accident (multiple compound fractures of the lower arm) in which complete functional disability ensued, because of immobilization extending over a period of four months.

Equally to be condemned is the use of injudicious early forced motion. This applies particularly to the fractures around the elbow joint. The lesson in this connection, taught by Sir Robert Jones, cannot be learned too thoroughly: Motion at this joint should

Fig. 4.—Complete functional disability due to excessively long immobilization. A useful hand could have been secured had the motion of the fingers been begun three weeks after the accident.

never be forced; after primary immobilization at an acute angle the arm should be allowed to extend from its own weight. Brisement forcé invariably produces excessive callus and increased stiffness.

SIMPLE TYPES OF APPLIANCES

Thus far I have dealt chiefly with mistakes in splinting. Now a few words as to simple methods of fixation applicable to injuries of the upper extremity:

For injuries of the musculospiral nerve, I use the little brace shown in Figure 5. It is better than any other I know, because in addition to holding the hand in the cock-up position, it holds the thumb abducted. For ulnar paralysis, a light splint should be made of two tongue depressors or of cigar box wood, and the fourth and fifth fingers held extended. For Colles' fracture, the rounded metal splints used by Sir Robert Jones are unquestionably the best. For any form of injury, in which there is danger of contracture, a little splint should be molded by running a plaster-of-Paris bandage backward and forward to form a layer sufficiently thick to hold the parts in the appropriate position. Injuries of the circumflex nerve or of the deltoid muscle, in which the abducted position of the arm is indicated, can be splinted by a corresponding plaster-of-Paris mold, reinforced by a small iron or steel band. This band is incorporated between the layers of the plaster-of-Paris, while these are setting, and should form an integral part of the splint. This plaster-of-Paris abduction splint I find lighter and very much cheaper than the aeroplane splint frequently used during the war.

In the after-treatment of contractures and stiff joints, the form of apparatus most generally used, the Zander pendulum devices, usually defeat their own purpose. A steady force constantly applied to the joint is far more efficacious than the sudden impacts produced by the pendulum apparatus. Of particular value are the splints shown in Figure 6. They are simply constructed, reasonable, and are so made that the same device can be used to extend as well as to flex the joint. Similar contrivances can readily be made out of plaster of Paris.

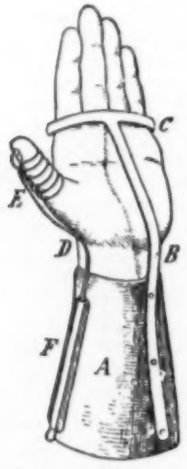


Fig. 5.—Light brace for musculospiral paralysis, holding the hand in the cock-up position and the thumb abducted.

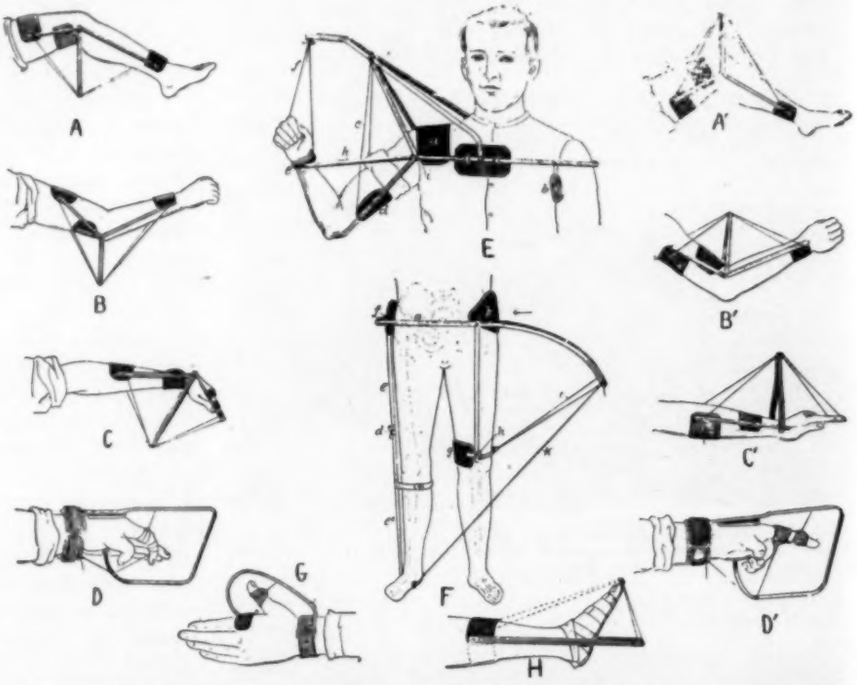


Fig. 6.—Schede-splints for the treatment of contractures and stiff joints. The same splint which is used to produce flexion of the knee can, by being inverted, cause extension. This also applies to the elbow, hand and finger splints.

USEFUL OPERATIONS

In the operative treatment I wish to touch on three new phases in the treatment of tendon, nerve and bone injuries. The problem of the suture of tendons has been before the surgeon for many years, and numerous answers have been given. To my knowledge, there are at least fifteen different tendon sutures advocated by well known surgeons. Whenever there is such a marked variety, one may be certain that there is no preeminently satisfactory method. During the last year, however, a technic for end-to-end suture of tendons has been devised by Dr. Bunnell of San Francisco which to my mind represents a radical surgical advance. Bunnell, basing his investigations on researches which Biesalski and I had conducted, applied the principles set forth by us for the transplantation of tendons in paralytic conditions to the suture of tendons divided by trauma. He showed that the usual method of tendon manipulation in these cases disrupts the tendon fibers and destroys those delicate gliding cells on the surface of the tendon whose significance my previous publications have emphasized. To overcome these difficulties he devised the tendon clamp, illustrated in Figure 7, so constructed as to hold the tendon fibers firmly together during the insertion of the suture, and at the same time to avoid traumatism to the gliding surface of the tendon. The method of inserting the suture is well illustrated and requires no further explanation. The results obtained by this method have, in my hands, been unusually good. It is applicable not only to the immediate suture of divided tendons, but also to the free transplantation of tendons to fill in the defect when the tendon ends have retracted excessively. Figure 8 illustrates a case in point: one of traumatic division of the flexor longus pollicis tendon, which came to operation two months after the accident. The gap of 2½ inches between the tendon ends was bridged by a free transplant of the flexor carpi radialis tendon. The resultant motion is shown in the illustration.

In nerve suture there is little question relative to the technic when an end-to-end suture of the neurilemma is feasible. When, however, loss of nerve substance has been so great that end-to-end apposition is impossible, then some form of bridging operation is required. I strongly favor the free transplantation

of a sensory nerve taken from the same individual to fill in the gap between the ends of the injured nerve. Since the sensory nerve at our disposal is invariably smaller in diameter than the injured, several segments must be used to construct a kind of nerve cable. For this purpose, a modification of the Bunnell clamp is of great service, as is seen by reference to the diagrammatic Figure 9. The results of this method of nerve bridging are shown in Figure 10.

In cases of loss of bone substance, the inlay graft method as developed by Dr. Fred Albee is of the utmost service. Figure 11 shows a case of injury to the radius with 2 inches of substance and consequent marked deformity of the hand. As the first stage of the operation, a wedge osteotomy of the ulna was performed, so as to permit correction of the deformity. The defect in the radius was then bridged by a solid graft taken from the tibia, wedged in

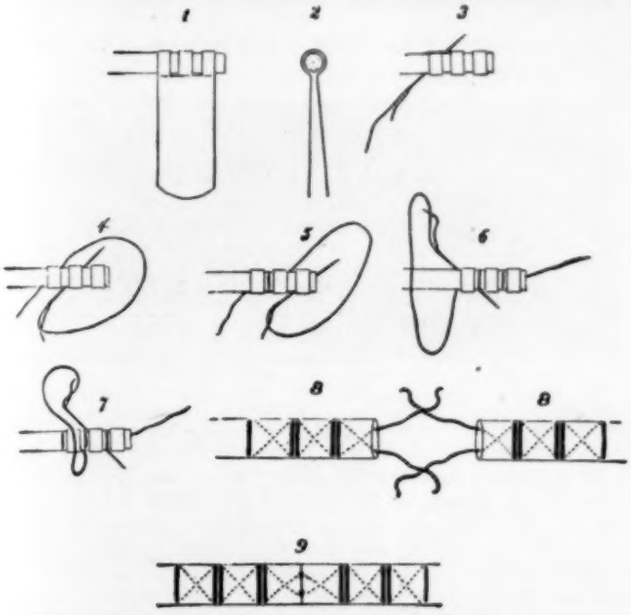


Fig. 7.—Bunnell clamp for end-to-end suture of tendons (courtesy of Tiemann & Co.): 1, side view of clamp applied to tendon; 2, cross section (end-on) view; 3, first insertion of needle; 4, second insertion of needle; 5, third insertion of needle—stitch pulled tight in first interspace; 6, other end of Pagenstecher linen thread, armed with needle—first insertion of this second needle; 7, second insertion of second needle (third insertion is identical with that shown in 5, but is naturally in the opposite direction; 8, diagrammatic representation of sutures in place, indicating which threads are knotted together (tendon is relaxed so that both ends come together without tension, and knots are tied); 9, completed suture. Passive and active motion should begin on the fourteenth day.

between the fragments of the radius in such a way as to hold them apart. The functional result was excellent.

ABSTRACT OF DISCUSSION

DR. ARTHUR H. CILLEY, New York: There is one point to be considered in connection with the type of "cock-up" splint that Dr. Mayer described. One must be careful not to have the patient wear it too long, because it tends to flatten the metacarpophalangeal arch, and also to hyperextend these joints. We who served in the British hospitals saw many of these hands, and they were very hard ones to restore to usefulness. In order to grasp, one must be able to hollow the palm, and the metacarpophalengeal joints are the most necessary of all in this action. For this reason we gave up the full palm splint and have used the short palm splint, making this part somewhat like a ball. We also try not to have the splint interfere with adduction of the thumb. Restoration of the function of the hand is frequently very difficult, and interference with the arches makes it just so much more so. With reference to the abduction shoulder splint, at U. S. Army General Hospital No. 9, at Lakewood, N. J., we used a splint which I had never seen before. Whether Dr. Cleary devised it or not I do not know. He

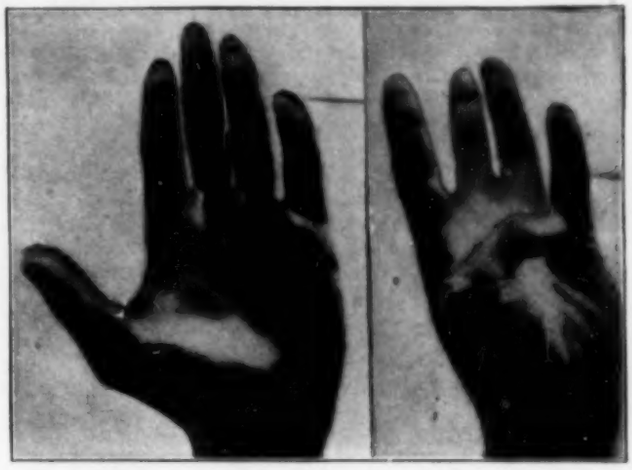


Fig. 8.—Traumatic division of the flexor longus pollicis tendon, with a gap of 2½ inches between the retracted tendon ends. The gap was filled in by a free transplant of the flexor carpi radialis tendon, the Bunnell clamp being used. The photographs illustrate the resultant range of motion three months after the operation.

was responsible for its use there, at any rate. Instead of having the entire splint on the affected side of the body, the bars along the body from the pelvis to the axilla were on the opposite side, the weight being carried by the webbing belt across the affected side of the pelvis instead of on the steel bar on this side. It has the added advantage of leaving the shoulder on the affected side entirely exposed, and also supported, instead of having the weight slung onto it. Through its use, also, I have not seen the deformities of the spine which I have seen when the weight was all on one side of the body, of course, only when the splint was required for a very long time. I hope some time to see a plaster-of-Paris splint that weighs as little as a steel or wire one. I have seen and made a good many, and one strong enough to be efficient has always been very heavy.

DR. JOHN RIDLON, Chicago: I should be glad to have the others who are to discuss the paper and Dr. Mayer say

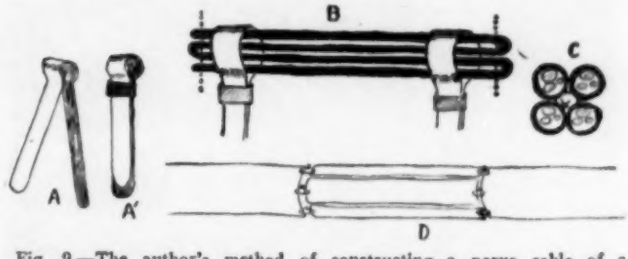


Fig. 9.—The author's method of constructing a nerve cable of a sensory nerve, to be used as a graft, bridging the gap between the ends of the severed nerve: *A*, modified Bunnell clamp open; *A'*, closed, with the cuff in place; *B*, manner of doubling the sensory nerve backward and forward, so as to form a nerve cable; the clamps hold the nerve segments together; the dotted lines indicate the point at which the nerve is cut across by scissors or a razor: *C*, semidiagrammatic sketch illustrating the end of the nerve cable; a single stitch has been inserted holding the four nerve segments together; note that the neurons present a sharp cross section, and can thus be brought into intimate contact with those of the injured nerve. *D*, semidiagrammatic sketch, illustrating the implantation of the nerve cable between the ends of the injured nerve. It is held in place by fine perineural sutures, one at each end of each nerve segment.

whether it is better to splint with the rigid cock-up splint or with a spring cock-up splint which will, when the muscles are relaxed, cock the hand up, but by which, when the patient wishes, he can flex the hand. Is it an advantage, or

a disadvantage, in the treatment of these cases, where a nerve suture has been done?

Dr. Samuel W. Boorstein, New York: The principles of Dr. Mayer are commendable and should be emphasized at lectures before insurance companies. The insurance companies do not refer cases to the orthopedic surgeon till marked deformity has occurred. For instance they think that any one is qualified to treat a fracture or burn, the result being that even in the slight cases bad deformities are allowed to develop. I had recently under my observation a patient with marked flexion deformity of the knee and hip and dislocation of the tibia on the femur as a result of a burn. That patient was discharged as cured because the wound was healed. The companies forget that the cost of such neglect is more than the few dollars they save by not having a specialist attend to their fracture cases or any other injuries leading to deformity. As far as the difference between a solid or a spring splint for the cases of peripheral nerve injury, my experience, while working in cooperation with Drs. Byrne and Taylor, was that the solid one is better as it does not permit any stretching of the weakened muscles.

Dr. Leo Mayer, New York: I thoroughly agree with what Dr. Boorstein said, and I hope that my remarks will come to the ears of the insurance companies and that they will profit by the opinion of this assembly. I certainly think it necessary that all cases should, from the outset, have the benefit of orthopedic advice; just as every single military accident and injury had the orthopedic advice of the army surgeon. Relative to the type of splint to be used, I think that the rigid type is better than the spring appliance;

Fig. 10.—Hand with injury to the ulnar nerve, 5 inches above the wrist, one and a half years subsequent to the implantation of the dorsal sensory branch of the ulnar nerve to bridge a 2-inch gap of the injured nerve. Note the absence of atrophy of the hypothenar muscles, the ability of the patient to spread his fingers apart, and the comparatively slight atrophy of the interosseus muscles. This atrophy was distinctly more marked before the operation, and gradually diminished subsequent to it.

because I believe in the principle of Sir Robert Jones that we must have complete relaxation of the muscle fibers. If they are stretched, more or less damage is done. Therefore, I use a permanent cock-up splint; or, in the case of injury of the external popliteal nerve, a splint to keep the foot dorsiflexed. As between the short and the long cock-up splint, there is much difference of opinion. In some cases, it is easy to flex the metacarpophalangeal joints, even in the long splint. If it prevents this action, use the shorter splint.

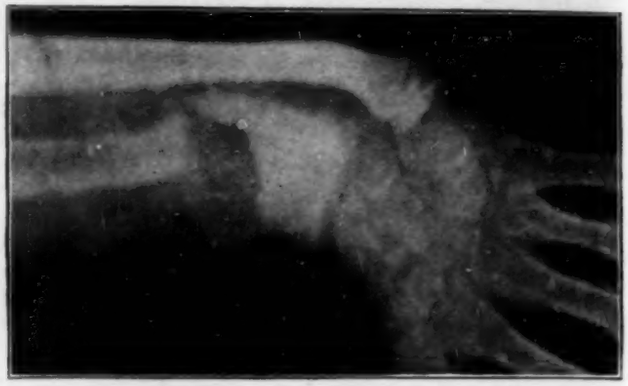


Fig. 11.—Marked deformity due to a 2 inch loss of bone in the radius.

Fig. 12.—Same arm as in Figure 11, subsequent to osteotomy of the ulna and bone graft of the tibia. The graft is shown inserted between the fragments of the radius.

It is important to drive the point of the proper treatment home to the minds of the medical profession at large, so that we shall not get these miserable drop wrists. So far as the airplane splint is concerned, I wish that Dr. Cilley would come and see the splint Dr. Ogilvy uses. He would find that it is lighter than any other. I saw an illustration of a splint used by Dr. Frazier that impressed me as being very efficacious, in which the bar started on the opposite shoulder and the longitudinal bar ran down the opposite side of the body. I think that this will be an improvement on anything we have seen thus far.

The Plague Menace.—The first case of pneumonic plague reported in Manchuria, occurred in Manchouli on Oct. 12, 1910. The last case was reported Dec. 25, 1910, two and one-half months after the outbreak. Owing to the energetic action of the Russian authorities only about 400 died. (Officially registered 392, p. 28.) In Harbin (or Fuchratein) the first cases were reported on Nov. 7, 1910. They were two tarbagan hunters, who had come from Manchouli. From both the Russian and Chinese records, small epidemics of pneumonic plague had occurred here before, but this time, within three months, over 5,000 persons in a population of 30,000 were killed by this disease. Harbin is closely packed and built on a low-lying swampy plain. It has narrow streets, and is inhabited principally by coolies. The majority of the houses are low, dark, dirty and overcrowded. On the other hand, Shuangchengfu, which is situated on the railroad line, 30 miles south of Harbin, is a finely planned city with wide streets and is famed for its large, well constructed houses. The population consists chiefly of families who have settled there. Half of the families are Manchus. There are wealthy land owners and leading Chinese merchants, people clean in their habits and homes. Yet, within seven weeks, there were 1,500 deaths in this city of 60,000 inhabitants.

RADIUM IN DERMATOLOGY*

HOWARD MORROW, M.D.
AND
A. W. LEE, M.D.
SAN FRANCISCO

This is a summary of three years' experience with radium as one of the factors in the nonoperative treatment of certain forms of cutaneous pathologic processes.

The first amount of radium placed at our disposal was received in 1916. As this was small in quantity we were obliged to confine our use of it to minor lesions. Since 1916, radium has been given to the University of California Hospital in steadily increasing quantities, and the good resulting from its use has increased correspondingly.

At the present time, the total amount of radium available for our use is 250 mg. This is distributed in varying quantities and in different forms of containers, ranging from a 5 mg. disk container to a 50 mg. tube container.

Obviously the different types of container, along with their varying content of radium, have different uses. For example, a rodent nodule the size of a pea would call for the application of a container, the periphery of which should only slightly overlap that of the area being treated. More extensive lesions would require a greater surface contact of radium. The needle form of container has some special points of value, such as in treating diseased conditions of the nasal cavity, tumors and deep seated growths.

Fig. 1.—Basal-cell epithelioma before radium treatment.

RESULTS OF RADIUM TREATMENT

It has been our practice, up to the present time, to bring the radium more or less into direct juxtaposition to the lesions subject to its action, with intervening screens of several types. The method of employing radium at varying distances from the parts to be influenced by it has, as yet, not been practiced by us.

Radium has been employed by us in a variety of skin diseases, but we feel that our best results have been in treating true basal-cell epitheliomas. In fact, radium therapy appears to be the ideal treatment for this class of slowly malignant neoplasm. There is very little if any pain attendant on the treatment, recurrences are rare, and the resultant scars are almost unnoticeable.

Excision is seldom employed in basal-cell growths, usually on account of the location, which is frequently on the nose or at or near one of the canthi. Curetting followed by cauterization is painful, the resulting crust is unsightly, and the scar is often rough and depressed. The application of arsenic paste is still more painful, and the scar following its use may be very pronounced. Roentgen-ray treatment for this type of growth is usually satisfactory, but we frequently find cases that resist this form of therapy and which clear under the

Fig. 2.—Basal-cell epithelioma (before).

Fig. 3.—Basal-cell epithelioma (after).

exhibition of radium. On the other hand, basal-cell carcinomas which do not improve under radium emanations are not affected by roentgen therapy. Furthermore, when such growths are located on the lids, or on or within the nose, they are more easily handled with radium plaques than with the Coolidge tube. In a former paper, before enough radium was at our disposal to be of sufficient value in treatment, we remarked that the so-called Bowen's type of epithelioma might be cured by its use. Since then we have had enough experience with radium to convince us that this view was correct. In all, we have treated five patients with the unmistakable signs of Bowen's form of epithelioma, and the condition, in each instance, has been cleared up.

Basal-Cell Epithelioma.—We have treated 112 cases of basal-cell epithelioma with radium. Of this group, the site of affection, in forty-four cases, was on the nose; in twenty-four, on the cheeks; in fourteen, at the canthi; in nine, on the temple; in seven, on the neck; in four, on the upper lip; in three, on the forehead; in one, on the abdomen; in one, on the chin, and in one, over the mastoid region. Of this number, three cases were so far advanced that treatment was futile, and they terminated fatally. In eighty-nine the condition cleared up, and so far has shown no recurrence. In fifteen instances there were recurrences, which cleared again with further radium treatment.

Squamous-Cell Carcinoma.—Our experience with this type of neoplasm has been quite limited, as we have advised the patients in nearly all such cases to consult a surgeon for treatment. We have assumed this attitude because of the uncertain action of radium on squamous-cell carcinomas, and on account of the early involvement of the neighboring lymph glands in this type of cancer. It therefore impresses itself on our minds that such cases should have the advantage of judicious surgery. Those cases of squamous-cell carcinoma which we have exposed to the action of radium

* Read before the Section on Dermatology at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

have been instances of recurrence, inoperable on account of the age of the patient or the location of the growth. Of these, fourteen resisted treatment, but five were healed and possibly cured. We have had some good results with radium therapy in cases of carcinoma of the floor of the mouth; these were considered inoperable by consulting surgeons. We have had similar experience with extensive squamous-cell

Fig. 4.—Basal-cell epithelioma (before).

Fig 5—Basal-cell eipthelioma (after)

carcinomas of the face and neck, in which operations were considered inadvisable because of the age of the patients.

Sarcoma.—The number of sarcomas subjected to radium emanation has been so small that any attempt to give a detailed statistical report would be of little value. Still, the results obtained in our small series were more satisfactory than in any other type of malignant disease, omitting the basal-cell epitheliomas. With the exception of melanotic sarcoma, all of the several varieties appear to be favorably influenced by radium treatment. These cases demand a heavy dosage, thick screening, and the burying of needle containers of radium in the tumor masses.

Nevi.—The large group of congenital cutaneous malformations should be spoken of in some detail, as radium has revolutionized the treatment of these conditions. The nevus which shows the most startling improvement after treatment with radium is the so-called strawberry mark, or cavernous angioma. In these cases the growths disappear entirely after a few applications, and the resulting scar is almost like the normal skin; this is particularly so if the radium has been sufficiently screened to cut off the superficial reaction, which so often leaves telangiectases. This variety of treatment is superior to that with carbon dioxid snow, as it is painless, and as the final results are generally more satisfactory. Horny or warty linear nevi are also successfully removed by radium. In previous years, we were in the habit of attacking such conditions with the galvanocautery or Paquelin cautery; but that practice necessitated the administration of an anesthetic, and was occasionally followed by keloid formation. Pigmentary nevi can be nicely removed by radium. Here, long exposures with heavy screening have given us the best results. The most unsatisfactory type of nevus for radium therapy is the angioma simplex, or port wine mark. Of the nevi handled by us in this manner, forty-two were of the strawberry mark type; seven, of the cavernous variety, consisting of large and hard vessels, and two, of the linear variety. All of the strawberry marks disappeared after from two to five treatments with radium, and the large cavernous growths were greatly improved. One linear nevus was quickly cured, and a very extensive one is now slowly yielding to treatment.

Warts.—All varieties of warts can be satisfactorily removed by subjecting them to the use of radium. But, as they are amenable to so many other and more available forms of treatment, it seems advisable to restrict radium therapy to certain types of verrucae. The most important are the warty growths which occur at the sides of, or under, the finger nail. If radium is employed in such conditions, and screened with proper precautions, the results will be satisfactory in most instances, both as regards the relief of pain and the large percentage of nonrecurrence. Second, perhaps, in importance come plantar warts. It is a common experience, however, that their identity is not recognized, because they are confounded with callosities and corns. In this type of case a chiropodist has usually been called on for relief, and all he does is to remove the horny covering, thus failing entirely to effect a permanent cure. On the other hand, the results of treatment of plantar warts with radium are all that can be desired.

Keloid.—In the majority of our cases of keloid, the application of radium gave excellent results. Considerable improvement can be predicted, especially when the keloid is of recent origin and appearing in young subjects. These forms are best treated by the tube or needle type of radium container, with 1 mm. of silver screening, and from four to six hours' exposure. This exposure should be repeated in at least six weeks. Additional treatments, of course, may be necessary.

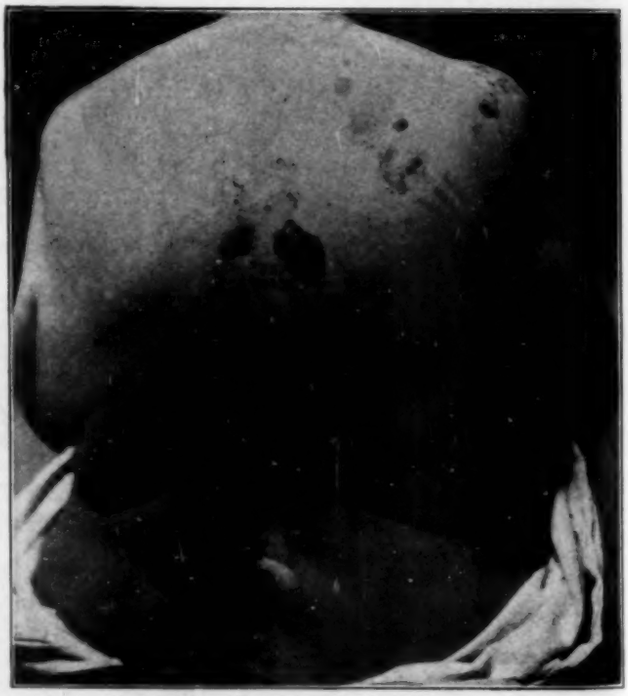


Fig. 6.—Bowen's type of epithelioma.

Lupus Erythematosus.—This is probably one of the most harassing diseases with which the dermatologist is confronted. In consequence, anything added to our therapeutic armamentarium in this field should be given our most thorough consideration. For the discoid, and the red, scaly, thickened areas of erythematous lupus,

radium is of value. Many short exposures are indicated in these conditions. In all, we have treated ten cases of erythematous lupus, and in some of them we have obtained more satisfying results than any we have secured in the past with other methods. We have found that this type of the disease reacts more favorably to radium treatment than to that with carbon dioxid snow or with the various types of heliotherapy.

Fig. 7.—Basal-cell epithelioma (before).

Fig. 8.—Cavernous hemangioma (before).

Myxomatous Cysts.—Occasionally, we see small myxomatous cysts on the dorsal and lateral aspects of the distal phalanges. In our hands, radium seemed to have a beneficial effect on these growths when it was applied in small plaques for an hour at each period, and with 0.5 mm. of brass screening.

Other Conditions.—In addition to the conditions mentioned above, other varieties of cutaneous lesions have been treated by us with success by the use of radium, such as lupus vulgaris, leukoplakia and pruritus ani; but with each the number of cases has been so small that we do not feel like discussing them at this time.

ABSTRACT OF DISCUSSION

DR. WILLIAM ALLEN PUSEY, Chicago: In general I agree entirely with the experience of Dr. Morrow. A few points which he brings up are of interest to me; with some I agree and with some I disagree. First, as to the relative value of radium and roentgen rays. I have been using radium for many years and I have been using roentgen rays for many years. From my experience I am entirely convinced that there is no essential difference between the two in their effects on living tissues. We can do with one just what we can do with the other. It is a question of the amount of energy we have available with either agent, and a question of convenience of application. Sometimes we get results with roentgen rays and not with radium; on the other hand, sometimes we get good results with radium and not with roentgen rays. I am firmly of the opinion that these variations in results are due to variations in the amount of energy which we apply or to some other variation in technic. As to screens: Dr. Morrow did not set up any confusing elaboration of details as to screens, but this is very frequently done. It is a source of confusion and the exact measurement of the thickness of screens is a matter of no practical importance. If you use a rubber finger cot, for example, you cut out the alpha rays. It does not make any difference whether this cot is one-fifth, one-half or one millimeter thick. The same is true of a thin aluminum screen, or a thin silver screen. Each cuts out the rays of a certain penetration, and the variation of a few tenths of a millimeter in thickness practically makes no difference.

As to the sort of epitheliomas you can treat with radium and roentgen rays: The statement is constantly made that basal cell epitheliomas are easy to treat and that squamous cell epitheliomas are very difficult to treat. Basal cell epitheliomas are more readily destroyed by roentgen rays or radium rays, but squamous cell epitheliomas can be destroyed equally as thoroughly by proper exposure. A few weeks ago I saw a man whom I treated with roentgen rays for a squamous cell epithelioma of the tip of the nose eighteen years ago. He has remained well ever since. As to the sort of lesions to treat: Since I gained my first experience I have followed this rule. I am willing to treat any epithelioma with radium or roentgen rays that does not require the deep removal of a large mass of tissue or the removal of contiguous structures. Our knowledge of the sort of lesions which may be treated successfully with radium or roentgen rays has not, in my opinion, changed much in fifteen years. Early in my experience with the use of roentgen rays I formulated from an analysis of their effects on tissues the indications for their therapeutic use. The generalizations then arrived at have guided me ever since and I have not seen any reason to change them. As an argument for the fact that roentgen rays and radium produce the same effects, Dr. Simpson, of Chicago, in an article on radium which he read two years ago, practically adopted verbatim my therapeutic indications for the use of roentgen rays as those to be followed in the use of radium.

Fig. 9.—Squamous-cell carcinoma (before)

Fig. 10.—Linear nevus (before).

DR. EVERETT S. LAIN, Oklahoma City: Dr. Morrow's experience has been very similar to that of most other men who have been using radium for several years. I have been using the roentgen rays for sixteen or seventeen years, having been a close follower of Dr. Pusey and other pioneer men in roentgen-ray therapy. Therefore, I was slow in tak-

ing up radium. But after visiting Dr. Sutton and Dr. Simpson about three years ago I was persuaded that I also needed radium. My experience has been similar to that of Dr. Pusey and Dr. Morrow. I was glad to hear Dr. Morrow say that radium was more effective than roentgen rays in sarcoma. I have found this especially true in cases of sarcoma of the antrum. Again, in cases involving the cartilages of the nose and ears, the roentgen ray had not been so satisfactory, nor had it been in cases of lesions on the surfaces with thin underlying tissues. There is a greater predisposition to telangiectasis with roentgen rays than with radium, perhaps because we did not screen roentgen rays in the early days as we did radium. I am sure that radium

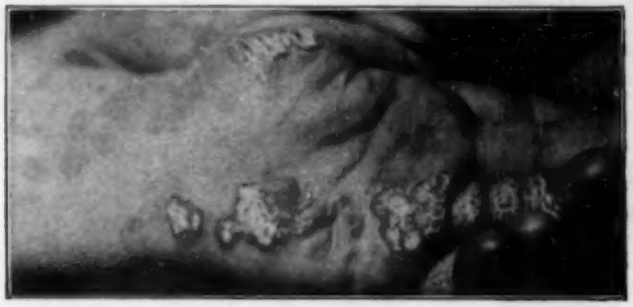


Fig. 11.—Linear nevus (before).

has come to stay and it is only a matter of time before all dermatologists will be using it. I have used it, as has Dr. Pusey, in the squamous cell types of epithelioma and have noted almost equally as good results as in the basal cell type. However, I still do not rely on radium alone in any of the malignancies in which there is a suspicion of metastases. I still use deep roentgen-ray therapy over all the adjacent glands. This routine in connection with radium has given me more successful results.

Dr. William H. Guy, Pittsburgh: I wish to bear testimony to the same results that Dr. Morrow reports and also speak of the relationship between roentgen rays and radium filtered and unfiltered. In the use of filters, particularly, it seems to me, it is important for us to understand that roentgen rays are heterogeneous gamma rays and that in filtered radium we again use the gamma ray, but of more homogeneous composition and also of greater penetration. I am inclined to disagree with Dr. Pusey. We do get some results in the chronic thickened patches of lupus erythematosus with unfiltered radium. One should produce a fairly sharp reaction, taking care to overlap thoroughly the edge of the lesion. I think that in vascular nevi of the port wine mark variety radium is of little service. The point made by Dr. Lain regarding telangiectasis as a result of radium depends to some extent on whether unfiltered rays are used or not. Quantity for quantity unfiltered rays will produce a good deal more reaction on the skin than filtered rays. When working with Dr. MacKee I used an unfiltered plaque of radium on my forearm and later used the filtered plaque on a different spot. The place where the unfiltered ray was used is still on my arm, but where the beta ray was cut out by the filter the mark has practically disappeared and I have nothing to show as the result of it. So that I feel that we have a definite therapeutic indication for the use of radium and definite indications for the filtering or unfiltering. When it is filtered we use the gamma rays altogether and I agree with the previous speakers that the result will be almost the same where gamma rays of radium or roentgen rays are used, if they are used in the same quantity. Some results may be attributed to lack of penetration. Roentgen rays are the choice in many cases on account of the enormous output of energy and ease of application in extensive dermatoses. Radium is at times chosen on account of the difficulty in treating certain parts with roentgen rays, and in some cases because it gives therapeutic results when roentgen rays fail.

Dr. Howard Morrow, San Francisco: I think Dr. Pusey will admit that the cases of erythematous lupus which are localized and scaling and rather thickened will improve a great deal under radium therapy. Certainly, generalized cases or diffuse areas over the face should not be treated by radium or any other type of radical treatment. In regard to the screening, when we first used radium we screened very little. I remember treating a plantar wart in a nurse with about one-tenth mm. aluminum screen for two hours, as recommended by the people who sold the radium to us, and about a week afterward the patient developed a very severe reaction. There was erythema for a few days and then a deep, big blister; this was followed by sloughing and this lasted about two or three weeks. To be sure, it cured the wart. I think the longer we use radium the more screening we are inclined to use. If we can use radium and get the results without well marked reaction, it is our desire to do so, and the greater the amount of screening the less apt are we to get the reaction. Of course, this means a great increase in the time of exposure.

Clinical Notes, Suggestions, and New Instruments

REPORT OF CASE OF CONGENITAL ABSENCE OF BOTH CLAVICLES

Walter G. Stern, M.D., Cleveland
Orthopedic Surgeon, Mount Sinai Hospital

L. C., a boy, aged 6 years, was admitted to the wards of Mount Sinai Hospital for the purpose of having his tonsils removed on account of chronic infection.

In the course of the usual routine examination, the house officer noted the absence of both clavicles and the fact that the shoulders could passively be brought together to an even farther degree than that shown in the accompaning illustration. There were no other anomalies and no pathologic findings outside of the enlarged tonsils. Palpation showed both clavicles to be entirely absent, with the exception of small rudiments one-half inch in length, articulating with the sternum and bearing the origin of the clavicular portion of the sternocleidomastoid muscle. While these rudiments articulate with the sternum, they can be moved in all directions, except anteriorly, by hooking the finger under them. The absence of the clavicles does not seem to interfere materially with the use of the arms or to diminish the strength of the muscles in this region. The boy's deltoid muscles are as strong as those of other children of his age, and the pectoralis minor muscles stand out firmly when actively contracted.

Boy with congenital absence of clavicles.

On inquiry into the child's family history, it was found that the father is suffering from a similar condition. In the father's immediate family are three brothers, all of whom lack clavicles, and one sister, who is blessed with the usual and normal number. The boy has two brothers, both of whom have this anomaly, and three sisters, who are normal in every respect.

Thus, in this family there are seven males, all of whom present the condition of congenital absence of both clavicles, and four females, none of whom are afflicted.

GUNSHOT INJURY OF THORAX WITH EXTRUSION OF THE ENTIRE STOMACH AND LACERATION OF SPLEEN*

CHESTER H. WATERS, M.D., OMAHA

The reports of many interesting and remarkable instances of thoracic and diaphragmatic war injuries will, no doubt, shortly appear in the literature; but the case to be reported will illustrate what can happen in ordinary civil existence. This fact alone offers my excuse for reporting it at this time.

REPORT OF CASE

History.—H. M., a boy, aged 15, Oct. 30, 1918, with several companions, was out hunting with a shotgun. The lad had climbed a steep embankment, and while he was on his knees, in the act of drawing up the gun, the muzzle toward him, with his left hand, it was discharged. A great hole was torn in the anterolateral aspect of the left side of the thorax. With assistance, the boy managed to walk about 600 feet to the nearest house, where he was seen by me about twenty minutes later.

Fig. 1.—End-result, showing extent of injury.

Examination.—The lad was in considerable shock. The entire stomach, much distended, was found extruded through the enormous hole in the lower part of the left chest. It occupied much the same position as a football when properly carried in the angle of the elbow, and was about the size of an adult head. The stomach seemed to be intact and was covered with a varied débris—dirt, grass and fragments of clothing—and was prevented from retracting by the jagged ends of the ribs. The patient was at once given 0.5 grain of morphin and transported to the hospital, at which everything had been ordered to be in readiness.

Operation.—Only the upper clothing was removed, and, under light ether anesthesia, the stomach was thoroughly irrigated with saline solution; then, as no perforations or lacerations were found, it was replaced in the abdomen, its size having first been reduced by compression.

The laceration of the diaphragm was linear, 3 inches long, and involved only the muscular portion. Exploration of the thoracic cavity disclosed that there was complete retraction of the lung, a portion of the lower lobe margin shot away, and considerable clotted and fluid blood. The heart, readily palpated, had retracted to the right and was lying under the sternum. The inner extent of the thoracic wound, however, was probably not more than one-half inch below and to the outer side of the normal situation of the apex. The chest cavity was carefully cleared of clots, fragments of ribs and clothing, and attention was directed to the diaphragmatic rent.

Suture had been started at the inner angle, No. 2 chromic gut being used, when considerable blood was observed issuing from the abdominal cavity. Investigation revealed that the spleen was almost completely torn in two and its diaphragmatic surface extensively lacerated as well. An attempt to deliver the organ through the diaphragmatic opening failed to offer comfortable access to its pedicle, largely because the costal margin was intact. The suture of the diaphragm was hastily completed, and the abdomen opened through a left rectus incision. A liter (quart) or more of free blood was found in the peritoneal cavity. The spleen was rapidly removed, after double ligation of its pedicle *en masse*, and a yard roll of 3-inch gauze was packed firmly in the subdiaphragmatic space to control oozing and to serve as drainage. No further injury was noted; the abdomen was then closed with through and through silkworm-gut sutures.

Then arose the problem of closing the thoracic wounded, which was 8 inches long and 2 inches wide. The seventh, eighth and ninth ribs having been shot away, an inch or more of the fragmented ends was removed, thus permitting further collapse of the chest wall and facilitating closure. Interrupted silkworm-gut sutures were used and the wound closed, but under considerable tension. Tube drainage was maintained for forty-eight hours.

The operation consumed about one hour, and the patient was in fair condition, with a pulse of 150. Proctoclysis and hypodermoclysis, with the usual stimulation, were given, and the patient rallied well. The gauze pack was removed at the end of thirty-six hours, under light anesthesia, and the thoracic drainage the day following.

Postoperative Course.—The course was satisfactory for ten days, and then the patient began to have a daily rise in temperature, which would reach 100 or 102. A suspicious area of dulness in the left chest was aspirated, and only old blood obtained. Several days later the attempt was made again, and a thick, mucopurulent exudate was found. Rib resection under local anesthesia resulted in the opening of a small pocket containing about 2 ounces of pus, in which one buckshot was found. Dense adhesions of visceral and parietal pleura were separated as widely as possible. The visceral pleura was greatly thickened and almost cartilaginous in character over the lacerated area of the lower lobe of the lung. Tubes were inserted to drain the abscess cavity.

Considerable superficial sloughing of the chest wound prolonged its healing. In anticipation of a scoliosis which was already quite marked, the patient was early given appropriate exercises to correct this inevitable tendency. Deep breathing, while the patient was hanging with the left hand from a height which just permitted touching the toes to the floor, met the requirement perfectly. In a comparatively short time the left chest had filled out, the heart returned to its normal position, and the spine became perfectly straight. The patient gained rapidly in weight and strength and was back in school two and one-half months following the injury. He is now a robust boy and apparently no worse for his experience.

Fig. 2.—Site of rib resection for localized empyema. Note lack of deformity of the spine and thorax.

A roentgen-ray examination made at the end of two months revealed almost complete expansion of the lung, with free action of the diaphragm. Numerous shot, evidently in the chest wall, were also showing, but have caused no trouble.

In the hope of noting the blood changes resulting from splenectomy, daily blood counts were made for a period of two weeks. A persistent average of 16,000 white cells with a polymorphonuclear percentage of from 80 to 85 was noticed. In the interpretation of the blood changes in this instance, one should consider the probable influence of moderate infection, as the patient was slightly febrile during the observation. July 19, 1919, nine months later, a blood examination gave a count of 5,500,000 red cells; the white blood count was 12,500, and polymorphonuclears, 78 per cent.

COMMENT

The literature reveals a number of cases of hernia of the stomach in injuries of the abdominal wall and in diaphragmatic trauma, but I do not find record of an instance which parallels the one just reported. The surprising feature of this case, to my mind, is that with the nature of the injury even more damage was not sustained.

* From the Department of Surgery, University of Nebraska College of Medicine.

Therapeutics

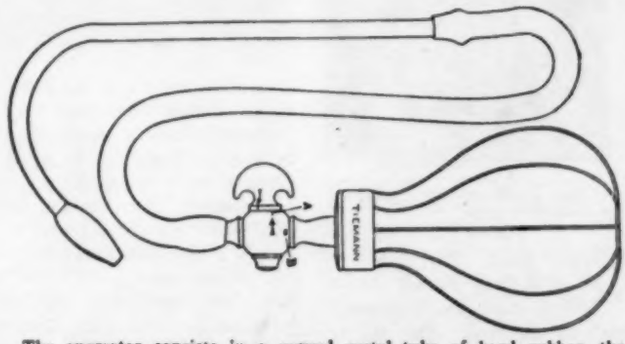
A Department Devoted to the Improvement of Therapy. A Forum for the Discussion of the Use of Drugs and Other Remedies in the Treatment of Disease.

USE AND ABUSE OF CATHARTICS*

(Continued from page 1442)

THE OIL ENEMA

While the oral administration of oil is conditioned on the absence of certain contraindications, its rectal injection is almost free from these; and, provided it can be retained, a much more direct method of softening the feces and favoring their evacuation than having it pass all the way through mouth, stomach and small intestine. For, it must be remembered, the contents of the cecum and ascending colon are liquid; if we can get the oil to these parts, which can be done by proper technic, it will keep the feces soft because it cannot be absorbed. Furthermore, the softening of the feces is also due to interference with the absorption of water, probably in a purely physical manner, the oil preventing diffusion of water into the mucosa. Lipowski[1] considers this effect of the oil enema of special significance, as he believes that a common form of constipation is due to excessive absorption of fluid from the colon, which results in abnormally hard fecal masses. According to him, the excessive fluid resorption is due to congestion of the colonic mucosa, which in turn is maintained by irritation from the resulting hard fecal masses. He bases his contention on abnormal redness of the mucous membrane, shown by these cases on sigmoidoscopic examination, and on the demonstration that, in such patients, a larger proportion of a physiologic salt enema is absorbed than in the normal. The oil enema breaks in on this vicious circle by keeping the feces soft, and soothing the mucosa.



The enemator consists in a curved rectal tube of hard rubber, the end of which is olivary shaped to make it self-retaining. This tube is made curved so that it comes up in front of the pubis; to this end is attached a 10-ounce Politzer bag, the connecting soft rubber tube being of a convenient length for the patient. The rectal tube is made with such a curve that it is readily passed from the front of the body to the anal opening; here by a slight traction movement it enters the anus in the proper direction, pointing toward the umbilicus. It has been demonstrated that this new form of tube is much less awkwardly introduced than by reaching around behind the buttocks. The Politzer bag is fitted with a stopcock having a small hole in one side, which permits the bag to fill with air when the cock is closed. The method of taking the injection is simple; the bag is allowed to fill itself, and is then placed in warm water to warm the oil. The patient lies on the back with the hips somewhat elevated and introduces the rectal tube with soft rubber tubing attached. The bag is then attached and the stopcock turned to permit the oil to be forced slowly into the rectum. The bag being emptied, the stopcock is turned and air dilates it so that all oil may be forced from the tubing; by shutting off the stopcock we prevent the return of any oil into the tube and obviate the danger of soiling the clothing and bedding.

This keeping of the feces soft by the oil enema must not be confused with the dissolving of hard fecal masses. Hertz[2] has shown that oil is a great deal less effective than water in breaking down hard scybala. He found, by actual tests, that water produced a greater softening effect on hard feces in fifteen minutes than could be achieved by oil in twelve hours. The only manner in which oil enemas are of use in dealing with hard scybala is to facilitate their expulsion by lubrication.

It is easy to understand, therefore, why, after the first oil enema, patients usually pass hard fecal masses, together with soft, mushy material and some of the oil. It is to be noted that some of the injected oil is retained, exerting its effect on the bowel movement of the next day, and even of succeeding days. Fleiner speaks of oil's having been found in evacuations as long as a week after discontinuance of its injection. When a daily injection is employed, scybala presently disappear, and soft, mushy stools are passed. This Fleiner considers an indication that the maximum effect has been obtained, and that the quantity and frequency of the oil injections may be reduced.

The evacuant action of injections of petrolatum, liquid or soft, is entirely due to the physical effects just described. The saponifiable oils have a chemical action, in addition, which is due to decomposition of the oil by lipase present in the colon. In this manner, some of the oil is changed to glycerin and fatty acids, a portion of the latter combining with bases to form soaps. All of these products are irritant; and, to the effect of these, a large part of the evacuant action of such enemas must be ascribed. The feces passed contain more free fatty acid than the oil did that was introduced, and the fecal odor becomes more offensive by admixture of the odor of rancid oil. Indeed, this decomposition and the irritation resulting therefrom may become excessive, leading to peristaltic unrest, even colic or rectal tenesmus. To minimize the occurrence of such disturbances, it is of greater importance that the oil be pure and free from rancidity (of an acidity not exceeding 40 to 55 [Fleiner]), than that it come from a certain source. Thus poppyseed oil, oil of sesame, or cottonseed oil, when pure, are just as good for this purpose as olive oil. It would seem that petrolatum would be preferable to all of these, as it can never become irritant.

Lipowski advocates the injection of petrolatum of a melting point of 38 C., that is, slightly above rectal temperature (37.5 C.). He claims not only absence of irritation and of offensive products of oil decomposition in favor of such enemas, but also lack of liability of leakage from the anus, which is at times most annoying when liquid oil is used. He also asserts that petrolatum enemas are less expensive.

The proper melting point is of importance in connection with Lipowski's petrolatum injections, for the material is introduced in melted condition and is intended to congeal to a salve after it has spread itself over the rectal mucosa. This consistency is obtained

* This is the fifth of a series of articles on the pharmacology, physiology and practical application of the common laxatives and cathartics. The first article appeared October 18.

1. Lipowski, I.: Eine neue Grundlage zur Beurteilung und Behandlung der chronischen Obstipation, Berl. klin. Wchnschr. **46**: 1359 (July 19) 1919; Die Behandlung der chronischen Obstipation durch Paraffineinläufe, München. med. Wchnschr. **57**: 2635 (Dec. 13) 1910.

2. Hertz, A. F.: Constipation and Allied Intestinal Disorders, New York, Oxford University Press, 1909, p. 293.

by melting together paraffin of a melting point of 78 C. with liquid petrolatum in the proportion of 1:8. The difference between administration of these petrolatum injections and of those of other oil lies in the somewhat higher temperature at which the material is injected and the necessity of having the injecting apparatus warm, so as to avoid congealing within it. To make certain that the injection is not too hot, the patient might dip his finger in the fluid. A colon tube and funnel suffice for the self-administration of these enemas, as the patient need not lie down during or after the injection. The patient might, after having passed the colon tube, seat himself at the edge of a chair and, bringing the tube up between his thighs, conveniently pour the melted petrolatum into the funnel. The quantity injected does not need to be more than 200 c.c. to obtain satisfactory results, as a rule. It would seem that enemas thus given might suffice and be preferred for the treatment of affections of the rectum and pelvic colon; while, for affections higher up in the colon, the technic presently to be described should be employed.

The indications for oil enemas might be thus summarized:

1. To soften feces, in constipation characterized by formation of hard scybala and that due to partial obstruction of the colon.

2. For evacuant action, in so-called "spastic" constipation, in pelvirectal constipation, and in any other form of constipation in which oral administration of cathartics is contraindicated by gastric disturbance.

3. For soothing action, in excessive colonic and rectal irritability. Herschell and Abrahams[3] consider oil enemas, next to appropriate diet, the single most important method of treatment in colitis. They are also useful in proctitis.

4. It has been suggested that oil enemas might inhibit the absorption of toxic products. That the oil has the power of removing substances soluble in it is shown by the fact that it is passed dark yellow or olive green and of offensive odor. We have no definite knowledge, however, of the degree to which this property might be of clinical value.

The chief contraindication to oil enemas is diarrhea, mainly because, in this condition, the oil would not be retained for a sufficient length of time to be of use; although another objection against the introduction of saponifiable oils would be the possibility that excessive peristalsis might carry unusual amounts of intestinal juices far down the colon, the results of the excessive oil digestion being liable still further to increase the irritation.

Technic.—For self administration, the patient should have everything prepared before going to bed, so that he does not have to get up after having taken the injection. The bottle of oil is placed in a basin of hot water until it has acquired blood heat (100 F.). An ordinary fountain syringe might be used, provided the nozzle has a sufficiently large bore to permit the oil to pass readily. Though it is intended that the oil shall be introduced slowly, the bag usually has to be hung from 2 to 3 feet high owing to the viscosity of the oil, which makes it run rather slowly. The clip should be placed within easy reach of the patient. Having poured the warmed oil into the bag, the patient lies on the left side with a folded towel and a firm pillow underneath the buttocks. The nozzle is inserted into the anus, and the oil permitted to flow. Should the patient experience distress or desire to move the bowel, the flow of the oil is checked and the patient remains quiet until the desire has passed. It might then be possible to introduce an additional quantity of oil. It is usually best, however, to be satisfied with the introduction of an amount that can easily be retained. After a while the patient turns on the back and finally on his right side, in which position it is recommended he should remain over night. A piece of absorbent cotton or a woman's sanitary towel or both may be applied to prevent accidental soiling of the bed, for the passage of flatus may be accompanied by a spurt of oil.

If the injection produces discomfort and interferes with sleep, it may be taken early in the morning and the patient might lie in bed for three or four hours afterward. It should be understood that, unless the oil remains in the intestine for several hours at least, satisfactory results cannot be expected.

The total quantity to be injected depends on the patient's ability to retain it. This is so variable that no definite figure can be stated for any one person. The principle to be followed is to have the patient gradually increase the amount injected on successive nights, until a satisfactory amount can be introduced and retained. The patient may not be able to retain more than 70 c.c. at first, but is likely to be able to take, in course of time, as much as 250 and even 500 c.c. When satisfactory results have been attained, the quantity introduced as well as the frequency of injections is gradually diminished. The injections may then be given on alternate nights, unless resumption of daily administration is necessitated by the patient's condition. Later on, enemas are given every third night, and finally only on the evening of the day on which the bowels were not opened. A single injection may cause daily evacuations for several days.

For children, the quantity injected may range from 50 to 150 c.c. For infants, 15 c.c. may suffice.

When the injection acts well, it is followed by a very soft stool in the morning. If the morning evacuation is not obtained, an enema of physiologic sodium chlorid solution should be taken after breakfast.

In bed patients, administration in the morning would be preferable. When an attendant gives the injection, a colon tube and funnel is all the apparatus required.

In spite of its excellent theoretical foundation and the enthusiastic recommendation of numerous clinicians, this treatment is not very popular, probably because of the troublesomeness of the procedure, the annoyance, and the expense. An enemator was described by Dudley Roberts,[4] by the use of which the procedure may be simplified.

(To be continued)

3. Herschell, G., and Abrahams, A.: Chronic Colitis, London, Longmans, Green & Co., 1914.

4. Roberts, Dudley: A New Rectal Enemator, J. A. M. A. **47**:273 (July 28) 1906.

Diet and Health.—A well selected diet is one of the keynotes to health. Unfortunately, we are not able to regulate the diet through legislation; it must be done through education. In many cases education may be done through pamphlets sent to the homes and through lecture to groups of people, but there are hundreds and thousands of families where the mother has too many children to get away from home, or where she needs more help for her own personal problem than a pamphlet can give. To help just such families as these the Dietetic Bureau has been established in Boston.—L. L. Gillett, *The Commonwealth* **6**:110 (May-June), 1919.

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SATURDAY, NOVEMBER 15, 1919

THE QUESTION OF LOW PROTEIN DIETS

There are many lessons taught by the experience of war time that should not be lost, even if the recurrence of its restrictions and hardships is an unlikely event. The shortage of food is an accompaniment of conditions that may arise quite apart from war. Famine may make its appearance in the midst of peace; harvests sometimes fail even when there is no clash of arms among nations. It is therefore the part of wisdom to learn how to live in times of food stringency so as to avoid as far as possible any detriment to human health and impairment of human efficiency.

The reports circulated with respect to the food restrictions enforced in many localities by the exigencies of war are more or less conflicting. We are assured by certain enthusiasts that the more economical modes of nutrition have frequently been attended with beneficial results. One heard the remark, earlier in the war, that the necessity of a lowered protein intake among the population of the Central Empires had on the whole been without detriment. The advocates of the so-called low protein standard welcomed such statements as evidence of the wisdom of their long heralded claim that most of us among civilized races tend to overeat. According to Friedrich Müller of Munich, the average German lost 10 per cent. in weight in the early years of the war. Surplus tissue must have been at a premium. Are we to look on such a state of nutrition as adequate if not advantageous?

In order to test some of the questions that arise from such considerations, Benedict and his collaborators at the Carnegie Nutrition Laboratory in Boston conducted an elaborate investigation on human vitality and efficiency under prolonged restricted diet.[1] Some of the results have already been referred to in The Journal.[2] As a result of the diminished food intake with a resulting decrease in body weight, amounting to more than 10 per cent., there was no pronounced decrease in physical endurance or capacity for work. The depression in the total metabolism was the most prominent feature in the research, particularly as it was accompanied by a depression in other physiologic factors, such as blood pressure and pulse rate. The changes were accompanied by a large loss of nitrogen from the body, amounting to 175 grams or more per person. Benedict argues that this loss is the most probable cause for the lowering of the plane of metabolism; for the withdrawal of a large amount of nitrogenous material from the fluids bathing the tissue cells is conceived by him to remove a potent stimulus to cellular activity. The picture presented by the men on reduced diet is similar to that noted with diabetics who have been undergoing the Allen fasting treatment. Loss of nitrogen and loss of flesh bring about a lowered metabolism.

The Carnegie report states that "judging superficially from the appearance of these men at the end of their long period of restricted diet and from the amount of their intellectual and physical activity, one could assert almost with certainty that a reduction of total caloric intake of one-third was an assured possibility." We must not, however, overlook the occasional secondary anemia indicated by the blood findings in Benedict's subjects, the marked repression of all normal sex expression, to which earlier reference was made,[3] and a certain degree of mental unrest and dissatisfaction expressed by the men. Perhaps Benedict and his collaborators are justified in asserting that "to instil into the world at large a belief that a pronounced lowering of rations is not necessarily accompanied by a complete disintegration of the organism and collapse of mental and physical powers may, after all, be of real service."

The report to which we have referred in some detail goes a step farther, however. Experimental evidence has accumulated in sufficient amounts, we are assured, to justify a serious consideration of a material reduction in the intake of protein, which is one of the most expensive factors in human food. We are told that it is not clear that a low protein diet is harmful, and that much of the available evidence suggests a lack of any danger therein. At this juncture we may pause to listen to some of the European experiences bearing on the problem. Von Hoesslin[4] has studied the realimentation of a considerable number of undernourished persons in Germany. They had been reduced to an average of from 44 to 55 kilograms in body weight on enforced diets poor in protein and low in calories. In many cases, edemas so characteristic of war-time dietary restrictions of the severer sort had made their appearance, though these signs of insufficient diet were by no means regularly present. The unexpected outcome was the demonstration of great difficulty in securing gains of weight, despite a considerable sup-

1. Benedict, F. G.; Miles, W. R.; Roth, P., and Smith, H. M.: Human Vitality and Efficiency under Restricted Diet, Pub. 280, Carnegie Institution of Washington, 1919.
2. The Reduction of Body Weight in War Time, editorial, J. A. M. A. **71**: 1580 (Nov. 9) 1918; The Limitations of War-Time Diets, ibid. **72**: 574 (Feb. 22) 1919.
3. Nutrition and Sex Expression, editorial, J. A. M. A. **73**: 612 (Aug. 23) 1919.
4. Von Hoesslin, H.: Klinische Eigenthümlichkeiten und Ernährung bei schwerer Inanition, Arch. f. Hyg. **88**: 147, 1919.

ply of calories, unless protein was liberally furnished. In other words, the supply of protein was the determining factor of real restitution. Under ordinary conditions of nutrition, fats and carbohydrates may have a marked protein-sparing action; but when the rock-bottom level of nitrogenous exchange is reached, no gains can be made by large increments of nonprotein foods alone in the diet.

So long as the limit of protein reduction without detriment is not understood, and untoward results of protein starvation can be cited along with the less conspicuously unfavorable experimental findings with the laboratory groups, we may hesitate to accept Benedict's conclusion that for all practical purposes the low protein diet is "perfectly justifiable as a war measure and in all probability is a logical procedure that cannot be accompanied with any untoward effects, even by long-continued practice." We may, indeed, be forced to accept it as a war measure; but let us hesitate to condemn nitrogen storage in the body until more is known regarding its real physiologic meaning and function. Science and human welfare alike are most concerned, not with the minimum in times of stress, but with the optimum in an era of plenty.

CHANGES IN MOTHER'S MILK UNDER WAR CONDITIONS

The lactating human mother is responsive to her own nutritive conditions, as are the milk-producing females of other species. Poor food, underfeeding and bodily hardships are likely to decrease the flow of milk whenever these instigators of unsatisfactory nutrition arise. Hence an inability to nurse their young adequately has been noted in the case of many mothers of warring peoples ever since statistics of this sort have been deemed worthy of record in medical literature. The countries of Europe have not escaped the consequences of an unsatisfactory milk supply as it affects nursing mothers, who have been compelled to endure unusual dietary restrictions both in quantity and in quality of available nutrients during the past four or five years. Actual inability to nurse the young has been reported from centers where the food stringency was the greatest; and since the best substitute for human milk, namely, cow's milk, has also been extremely scarce at a time when it was needed more than ever, the penalty paid by the innocent young for the combats of their fathers became doubly severe.

An unexpected deficiency in the nutrition of the very young has been admitted of late by a number of German pediatricians.[1] This involves authentic instances in which infants failed to make adequate gains during the war despite the absence of any signs of organic inability to utilize nourishment or of pathologic conditions that would warrant the expectation of a failure to thrive. In a considerable group of such cases, Kaupe[1] has determined the amounts of milk consumed by the sucklings at the breast and found them to be sufficient according to conventional standards. The composition of the mother's milk has likewise not revealed any deficiency in fat, the component most likely to be decreased, as has heretofore been believed, when the quality of the milk suffers.[2]

In the face of failure of infants to grow properly despite a reasonable food intake of breast milk of seemingly normal fuel value, it has become necessary to postulate some as yet inexplicable cause for the unexpected phenomenon; for these cases have a history of feeding with mother's milk, presumably the ideal mode of infant nutrition. Kaupe vaguely ascribes the situation to an undefined psychic factor that seems to affect all persons in war time. We recall, however, that in not a few instances human milk that was of normal composition, judged by the conventional standards of its content of protein, fat and sugar, has failed to furnish all the needed food factors. This is true of the milk of mothers suffering from beriberi. The mammary secretion lacks essential vitamins. It has also been shown that the young of animals maintained on rations deficient in vitamins fail to grow adequately, presumably because the milk lacks these accessory food factors that the maternal organism cannot produce de novo. The reports of unsuccessful growth in infants under dietary conditions hitherto regarded as suitable for proper development warn us to have some concern, in the future, for food properties heretofore not adequately evaluated. To determine them, chemical analysis is as yet without resources. The biologic method of investigation by actual animal feeding, which has furnished so many important contributions of late to the science of nutrition in the hands of American research workers, must for the present remain the first recourse of the investigator.

PHYSICIANS AND STATISTICS

While there have always been those who have cast discredit on the scientific value of statistics, it remains a fact that some medical knowledge must be derived from statistical investigation. Statistics may, of course, be juggled, and it is also fair to assume that statistics are often prepared by persons not skilled in the fundamental principles underlying their preparation. It is probably true that the bulk of medical statistics of the past has been prepared by medical men not trained as expert statisticians.

Recently Mr. Raymond Pearl,[3] professor of biometry and vital statistics in the Johns Hopkins School of Public Health, has analyzed, from the point of

1. Kaupe, W.: Muttermilch und Krieg, Monatsschr. f. Kinderh. 15: 83, 1918.

2. Momm and Krämer: München. med. Wchnschr., 1917, No. 44.

3. Pearl, Raymond: A Statistical Discussion of the Relative Efficacy of Different Methods of Treating Pneumonia, Arch. Int. Med. 24: 398 (Oct.) 1919.

view of a trained statistician, certain figures in a paper published by Head[4] concerning the efficiency of various methods of treatment in pneumonia. In this paper Dr. Head himself suggested that the lowered mortality shown in favor of closed ward treatment might be merely a coincidence. In his analysis of the figures, Pearl shows that while Head's conclusions are qualitatively correct, they are quantitatively out of the way on account of the neglect to take into account the factor of random sampling. Another neglected factor, frequently overlooked by medical writers, is the natural history of the disease under investigation. It has been asserted by numerous observers that the mortality from influenzal pneumonia at the end of an epidemic is usually much lower than it is at the beginning of the outbreak. Pearl shows that this is the case, and that Head, although recognizing the possibility, did not take it into account in evaluating his figures.

If the statistical method, first extensively introduced into clinical medicine by Louis and the French school, is of value, it goes without saying that the statistics which are used must be based on the well-recognized principles utilized by professional statisticians. So far as mortality statistics are concerned, it may be assumed that the correct methods are usually employed; but it is certain that this is not the case when ordinary clinical statistics are concerned. In any textbook on medicine or surgery, one may find numerous statements covering statistically such matters as the age at which certain diseases occur, the relative proportion of the sexes involved, the frequency of complications, and the relative frequency of different diseases in a given organ or system. It is quite certain from the figures presented that these statistics would be regarded as valueless by a professional statistician, and that while they are perhaps not valueless to the clinician, they are not nearly as valuable or as correct as properly prepared statistics would be. In differential diagnosis, as Southard has pointed out, it is desirable that the physician should know the possibilities. In 10,000 patients with convulsions, what proportion is likely to be due to epilepsy; What proportion to uremia; what proportion to general paresis, etc.? With correct knowledge on such a point, the physician knows when he encounters a case of convulsions that there are certain chances in favor of a given disease, and he can make what Southard calls a diagnosis by orderly exclusion, which is more satisfactory than the old-fashioned diagnosis by exclusion in which the probabilities were ignored. In the matter of treatment, too, the application of correct statistical principles would prevent the flooding of medical periodicals with the views of therapeutic optimists based on uncontrolled observations. The checking of medical statistics by trained statisticians will doubtless serve as a stimulus to more accurate statistical methods.

4. Head, G. D.: The Treatment of Pneumonia, J. A. M. A. **72**: 1268 (May 3) 1919.

THE HABITS OF LICE

The rôle of insects in the transmission of disease is becoming more prominent each year. The fly, the mosquito, the flea and the louse have come to represent not merely irritating and offensive nuisances which interfere with the comfort of man but also positive menaces to his very existence in a state of unimpaired health. Features of insect life, such as the habits, migration, reproduction and distribution of these lowly forms of animals, are no longer the concern of the scientific entomologist alone; they also inevitably interest the medical investigator and the sanitary expert. It almost seems as if no item respecting the behavior of insects can be neglected in microbe-bearing species.

Lice are sensitive to temperatures that approach the body temperature of man. Nuttall[1] has observed that a rise to 35 C. (95 F.) may be distinctly inimical to these insects. Owing to the high temperature near the body in summer, they tend to wander out on ordinary garments. For the same reason they wander away from persons in fever. It is recorded[1] that persons leaving temperate climates for the tropics may become freed from body lice. Nuttall[2] has more recently found that black clothing may repel lice. This is not due, as has been conjectured, to the reaction of the insects to color, but rather to the fact that black cloth, in contrast with lighter colors, absorbs the maximum of heat rays. Consequently, under favorable conditions in warm weather, black clothing may prove inimical to lice and cause them to wander away where it is cooler. Perspiration induced by warm clothing will hasten the exodus, because lice do not tolerate excessive moisture.

Having observed that lice examined from various parts of the world possess different degrees of pigmentation, Nuttall[2] ascertained that the most darkly pigmented specimens of *Pediculus capitis* are derived from dark-skinned black-haired peoples. Head lice tend to grow paler on yellow or moderately pale races possessing black hair. The palest head lice are found on white races whose hair is often light. Experiments conducted in his laboratory at the University of Cambridge, England, have convinced Nuttall[2] that pigmentation in *Pediculus* is not a hereditarily transmitted character, but depends on the nature of the background on which the insect lives. Eggs hatched and allowed to develop on white surfaces will appear pale; those raised on black cloth will remain pigmented at all stages. The occurrence of pale body lice on dark-skinned races is, according to Nuttall, doubtless attributable to the white or light-colored clothing worn in hot countries. It has been suggested that the change in pigmentation of lice, in harmony with the color of their background, may afford a measure of protection to these parasites in nature when the hosts use their eyes in the search for the insects.

1. Nuttall, G. H. F.: Parasitology **10**: 89, 132, 1918.
2. Nuttall, G. H. F.: The Biology of Pediculus Humanus, Parasitology **11**: 201 (Feb.) 1919.

Current Comment

WORK AND INCOME: A PHYSIOLOGIC PROBLEM

In the ideal division of income usually proposed by economists, the expenditure for food has been placed at approximately 30 per cent., or one third of the total funds available. Prior to the war, Miss Gibbs[1] showed the expenditures for food to be far larger than this proportion among the less well-to-do classes, the percentage of the total income devoted to food commonly exceeding 50. She concluded that the income must evidently go beyond $1,200 per annum—in prewar values—before a reasonable decrease in the percentage spent for food may be expected. The data collected by the English Board of Trade in 1904 showed that for families in receipt of less than 25s. weekly, 67 per cent. of total outgoings were expended for food, the proportion falling as low as 57 per cent. only in families earning 40s. or more weekly. Data collected by the Working Classes Cost of Living Committee in England in 1918 indicated that skilled and unskilled workers alike spent for food 60 per cent. or more of their income, in contrast with about 55 per cent. as determined in 1914. These facts may serve at this time as a text for the discussion of the actual food needs of workers. The high cost of living is everywhere in the public mind. Consequently it is important to review anew the evidence regarding the physiologic demands made by physical work on the food purse. The war has for the first time made considerable demands on women to expend their energies in toil of an exacting sort. Hence the need of including them in the newer calculations of food requirement in relation to industry. The Food (War) Committee of the Royal Society has just published the results of investigations by Greenwood, Hodson and Tebb[2] dealing with the metabolism of female munition workers. Grouping the operations of these persons in the sequence of severity of the labor involved, it is concluded that light turning and forging need about 100 calories per square meter per hour. The data for other operations are as follows: for tool setting, heavy turning, stamping, finishing and shell hoisting, 125 calories; for gaging, walking and carrying, 160 calories; for more arduous labor, 180 calories. Translating these findings into food fuel requirements for the entire day, after allowance is made for culinary and alimentary waste, etc., the needs amount to 2,800, 3,100, 3,500 and 3,800 calories, respectively, per day. The figures cited show that the energy requirement of the lightest class of workers may be only about three-quarters that of the heaviest. Nevertheless, the remuneration of the kind of work conducted by the latter is often much less than that of several operations calling for many fewer calories. Even after making allowance for one and a half nonworking days, the weekly calory requirement of the two most unlike groups ranges from 17,000 at one extreme to 21,500 at the other. Any scheme of remuneration that aims to make returns adequate to keep the cost of food at a reasonably low proportion of the total income must take into account the decidedly greater food needs of those who often represent the least well recompensed group. Thus, a food allowance of $10 a week which just suffices for the less active worker must be augmented to $13 in case the greater effort is expended. As the English experts now remind us, in any scientific appraisement of the income needed to maintain an accepted standard of living, it is essential to determine the minimal expenditure necessitated by the occupation of the wage earner. Variations in physiologic demand translated into terms of money may nowadays be not inconsiderable.

1. Gibbs, Winifred S.: The Minimum Cost of Living, New York, the Macmillan Company, 1917.
2. Greenwood, M.; Hodson, C., and Tebb, A. E.: Report on the Metabolism of Female Munition Workers, Proc. Roy Soc., Section B, 91: 62 (Aug. 6) 1919.

COLLEGE HEALTH ADMINISTRATION

Many of our colleges and universities maintain supervision, varying in extent and effectiveness, over the physical welfare of their students. In a considerable proportion, attention is paid to defects observed in a physical examination and to the care of patients who apply for medical treatment. But health supervision should not stop here. Howe[1] has again pointed out that the sanitation of the college plant as a whole has received altogether too slight notice, and in only exceptional cases is any really systematic attempt made to control hygienic conditions. Failure seems to be due largely to the lack of properly constituted health organizations. It makes little difference what department of the college is responsible for the health administration, so long as it is in the hands of qualified experts, with power to utilize all the facilities of the institution, who will cooperate with municipal authorities. In some instances the physical education department would be the natural center, in others the department of public health or of bacteriology; local conditions must determine this. Some specialist must be available—perhaps he may actually have the title of health officer—who as a part of his regular duties will be responsible for the general hygienic condition of the college. Besides directly affecting the health of the college community, a health administration will serve as a means of educating the students to the need of supervision of city, town and rural sanitation; thus, when they leave college, their influence will be with the movement for a more active health administration.

1. Howe: Am. J. Pub. Health 9: 749, 1919. Anderson: Am. Phys. Ed. Rev., April, 1917, p. 202. Winslow: School and Society, December, 1916, p. 997.

THE ANTISEPTIC POWER OF THE GASTRIC JUICE

The antiseptic properties of the gastric juice have been recognized for more than a century. The advantage of the existence, near the beginning of the alimentary tract, of a reservoir within which fermentation and other microbial changes in the food ingested can be checked became apparent early in the days of modern physiology. It was not until comparatively recent times, however, that the rôle of the free acid of the

gastric contents in relation to its antiseptic behavior began to be understood. The gastric hydrochloric acid has proved to be of immense advantage in many ways. Not only does it facilitate the normal cleavage of protein foodstuffs by enzymatic means and retard other modes of their disintegration by micro-organisms, but it undoubtedly checks the development of bacteria that are more directly inimical to the body. We are now taught to appreciate that a copious, acid gastric juice is destructive to the cholera and typhoid germs; hence the physiologic duty of maintaining a healthy stomach function as one of the safety devices of the organism against dangerous invaders. How vigorous the antiseptic power of normal gastric juice may be has lately been demonstrated anew by Scheer[1] at Strasbourg. Bacilli of the typhoid, paratyphoid, Flexner and Shiga groups were killed thereby in two minutes; the colon bacilli are somewhat more resistant. These striking facts must not, however, be transferred directly to the interpretation of conditions as they exist in the body itself. When bacteria are enclosed in larger food masses they are reached only slowly by the penetration of the gastric secretion; in fact, they may occasionally escape into the small intestine without destruction. This is particularly true when the gastric functions are repressed or inadequate. Hence it is no mere chance that dysenteric bacterial disease is most likely to arise when the activities of the stomach are below par.

THE NEW QUACKERY

There are fashions in quackery. The 1919 Model is that which commercializes the trend of the public toward the so-called drugless methods of healing. A mail-order course on "How to Cure What Ails You, Without Drugs: in Six Easy Lessons," by Dr. Quack or Professor Fake, is the lure. It proves a veritable gold mine for those who promote the scheme and for the magazines whose advertising pages furnish the point of contact between seller and purchaser—the spider and the fly. The theories so solemnly propounded by the exponents of the new quackery are usually made up of about 5 per cent. banalities of elementary science and 95 per cent. of pseudoscientific flapdoodle. The occasional rational, if obvious, things that quacks of this type say mislead intelligent people into accepting the ridiculous theories that are thus commercialized. Because the product sold is not put up in a bottle, the public assumes that it is free from quackery; therein it is mistaken.

FRIEDMANN IN A NEW RÔLE

To those who recall the punctilious care with which appointments to posts of importance in the German universities were made during prewar times, an incidental announcement of a recent addition to the Berlin medical faculty will come as a great surprise. Through ministerial orders and without the cognizance of the faculty, Dr. Friedrich Franz Friedmann was appointed assistant professor of tuberculosis. This is probably the same Friedmann who appeared in this country a few years ago with preposterous claims for the therapeutic virtues of products prepared by the use of tubercle bacilli obtained from turtles. His story has been told in THE JOURNAL, which at the same time exposed the untenability of his claims. The consternation of the German medical profession at this unheralded academic preferment is voiced by the *Deutsche medizinische Wochenschrift*[1] which says: "This is, as far as we are aware, the first time that an investigator has, without cognizance of the medical faculty, been assigned to a teaching post for a single chapter in medicine, despite the fact that his qualifications have not hitherto been tested in any way. Just as today Friedmann has been made professor of tuberculosis, so tomorrow," the *Wochenschrift* proceeds to lament, "a call may be issued to an incumbent for diabetes, for treatment of syphilis without arsphenamin, for nonsurgical therapy of cancer, or for drugless therapy." Such is the new regimen in Germany. It will be interesting to watch the reaction of the Berlin medical faculty to such developments in the educational procedure of the new German state.

1. Scheer, K.: Ueber die keimtötende Wirkung des Magensaftes auf die Bazillen der Typhus-, Koli- und der Ruhrgruppe, Arch. f. Hyg. 88: 130, 1919.

1. Deutsch. med. Wchnschr., July 10, 1919, p. 775.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Hospital Notes.—The new Jackson Infirmary which has just been opened is a building of brick and hollow tile with concrete finish. The cost of the building and equipment exceeds $30,000.——The hospital erected at Fairfield by the Tennessee Coal, Iron and Railroad Company was opened to the public for inspection, October 29. The hospital occupies a site overlooking the Fairfield and Ensley industrial district.

Health Department Appointments.—The committee of public health at a meeting, held October 22, in Montgomery, confirmed the appointments of Dr. Paschal P. Salter, Good Water, director of the state laboratory, and appointed Dr. James L. Bowman, Union Springs, director of the department of communicable diseases, and Dr. G. L. Reynolds as first assistant director of the state laboratory, and continued W. C. Blasingame in his duties as director of the department of social control.

ARKANSAS

Medical Society Organized.—The physicians of Blytheville organized a society for Blytheville and Mississippi County, electing Dr. Joseph A. Saliba, president; Flem D. Smith, vice president, and Isaac R. Johnson, secretary-treasurer, all of Blytheville.

New Society Officers.—The council of the Arkansas Medical Society at its meeting in Little Rock, November 7, elected Dr. William R. Bathurst, Little Rock, to fill the vacancy caused by the death of Dr. Clinton P. Meriwether. Dr. Robert L. Saxon, Little Rock, was elected treasurer, succeeding Dr. Bathurst.

FLORIDA

State Board Office Moves.—The offices of the state board of health which have been located in San Carlos Hotel, Pensacola, have been transferred to the State Laboratory Building.

Personal.—Dr. Lorin A. Greene, Greenville, has been appointed chief of the bureau of venereal diseases of the state board of health.——Dr. J. W. Buck has been appointed assistant state health officer.

Resolution on Leper Colony.—The Duval County Medical Society at its meeeting in Jacksonville, November 4, adopted

a resolution setting forth that the opposition to the establishment of a leper colony by the United States Public Health Service on an island off the cost of Florida is unfortunate; that from a medical standpoint there should be no opposition to it, and that the arguments advanced against it should be met by the medical profession with an educational propaganda for the purpose of showing that a leper colony controlled, will be of no disadvantage to the state, and will be of advantage in taking care of Florida's lepers, now at large. It was further resolved that copies of these resolutions should be sent to the daily press and the Surgeon-General of the United States Public Health Service.

ILLINOIS

Cook County Civil Examinations.—The Cook County Civil Service Commission will hold examinations for the attending staff of the hospital in the various subjects, beginning December 4 and continuing to December 19. In these examinations knowledge of the special subject is rated at 9 points and experience at 4.

Southern Illinois Physicians Meet.—At the forty-sixth annual meeting of the Southern Illinois Medical Association, held in East St. Louis, November 6 and 7, the following officers were elected: president, Dr. Henry H. Roth, Murphysboro; vice presidents, Drs. Charles E. Eisele, East St. Louis, and H. M. Ross, Carbondale; secretary-treasurer, Dr. Alonzo B. Capel, Shawneetown, and assistant secretary, Dr. Charles W. Lillie, East St. Louis. The next meeting will be held in Carbondale.

LOUISIANA

Sanatorium Notes.—Providence Sanatorium, an institution for negroes at Delachaise and Robertson streets, New Orleans, is almost completed. The building is already being equipped. ——It has been definitely decided by the Lincoln Parish Memorial Association to erect, in memory of the men who went to war from that parish, a sanatorium, for which a site has been donated by the town council of Ruston on condition that the Memorial Association spend $50,000 on the building. Half of this amount has already been secured.

Child Welfare Lectures.—Four lectures on the care of young children are being given in New Orleans, under the auspices of the Child Welfare Association. The first lecture was delivered by Dr. John P. Leake, New Orleans, November 3, on "The Care of the Eye, Ear, Nose and Throat of the Growing Child." November 10, Dr. C. Jeff Miller, New Orleans, delivered a lecture on the subject of "Prenatal Care"; November 17, Dr. William H. Harris, New Orleans, is to speak on "Germ Producing Diseases in Children," and November 24, Dr. Maude Loeber, New Orleans, will deliver an address on "Nervous Diseases Common to Children." In addition to this course the committee has organized a series of addresses by specialists on the feeding and care of babies.

MARYLAND

Personal.—Dr. C. Hampson Jones, health commissioner of Baltimore, has appointed Dr. T. C. Buck to be third assistant in the bacteriologic laboratory, to fill a vacancy.——Dr. George F. Sargent, head of the men's department of the Sheppard and Enoch Pratt Hospital, Towson, for ten years, has resigned. His resignation will take effect next month.

Queen Visits Hospitals.—During her short visit to Baltimore, Queen Elizabeth of Belgium, because of her great interest in hospital work, made a hurried trip to the Johns Hopkins Hospital, where she and her party were received by Dr. Winford H. Smith, Baltimore, the superintendent, and conducted through all the departments of the hospital. ——The Red Cross Vocational School for Blinded Soldiers at Evergreen Junior, Roland Park, was also visited by the queen, who was much impressed by the splendid work being done there by the blinded soldiers.

Funds for Hospital Pass Goal.—In the campaign which has just been brought to a successful finish in Baltimore, to secure $750,000 for the proposed Union Memorial Hospital, which will replace the old Union Protestant Infirmary, the subscriptions aggregated $769,018.47. Dr. John M. T. Finney, Baltimore, was chairman of the drive and as a special honor to him and also to inspire other young men who may enter the medical profession to emulate the virtues and habits which have made Dr. Finney one of the foremost surgeons in this country, the "Committee of Nine," in charge of the drive, with about sixty others, gave to the hospital on the final day of the campaign an operating room, to be known as the John M. T. Finney operating room, to be constructed at a cost of $35,000.

MASSACHUSETTS

Professor Strong Sails for Europe.—Dr. Richard P. Strong, professor of tropical medicine in Harvard Medical School, Boston, sailed, October 2, for Europe, where he is to be chief medical director of the League of Red Cross Societies, with headquarters in Geneva, Switzerland.

Hygiene Lecturers.—The Massachusetts Society for Social Hygiene announces that it is prepared to send lecturers, both men and women, who thoroughly understand the vital relation social hygiene bears to the home and public health. The subjects of especial interest in this work are "The Instruction of Children Regarding Life and Birth," "Problems of Adolescence," "The Menace of Venereal Diseases to the Community," "The Girl Problem," "Feeble-Mindedness," "Juvenile Delinquency," and "Alcoholism." Arrangements for lectures or personal consultations may be made by writing to the office, 50 Beacon Street, Boston.

Benefactor Announced—In the obituary notices of this week, appears the notice of the death of Dr. Henry K. Oliver, Boston. Several years ago, when Dr. Oliver's health began to fail, he made over to Harvard University, practically his entire fortune, arranging for a reservation sufficient for his living and personal needs, and stipulating that his gifts be received as from an anonymous friend, the name of the donor to be disclosed only on his death. This gift was to found a department of hygiene at Harvard, through which the general welfare and health of undergraduates could be carefully considered, and receive proper attention and oversight. Dr. Roger Irving Lee, Cambridge, has been serving as the first occupant of this professorship. Hereafter this department will be known as the Dr. Henry K. Oliver Foundation.

Medical Examiners Appointed.—Dr. Winthrop Adams, Cambridge, has been appointed associate medical examiner (coroner for the first Middlesex District. The following reappointments of medical examiners have been announced: Dr. William P. Stutson, Cummington, associate, first Hampshire district; Dr. Johnson R. Woodward, Oxford, associate, eighth Worcester district; Dr. Richmond B. Root, Georgetown, associate, sixth Essex district; Dr. Samuel C. Tucker, Peabody, associate, eighth Essex district; Dr. Nathaniel K. Noyes, Duxbury, third Plymouth district; Dr. Andrew J. McGraw, Taunton, associate, second Bristol district; Dr. Charles A. Atwood, Taunton, associate, first Bristol district; Dr. A. Elliot Paine, Brockton, associate, first Plymouth district; Dr. Garry de N. Hough, New Bedford, associate, fourth Bristol district; Dr. Frederick V. Murphy, Attleboro, associate, first Bristol district, and William J. Clarke, Milford, associate, sixth Worcester district.——Dr. Henry M. Pollock, Boston, has been renominated as a member of the commission on mental diseases.

MICHIGAN

Michigan Practitioner Arrested in Indiana.—Dr. A. W. Van Bysterveld, Grand Rapids, is said to have been arrested at Milford, Ind., October 20, charged with practicing medicine in Indiana without a license. The defendant claims that he is not a physician but a chemist.

Given Prison Term.—Dr. George A. Fritch, Detroit, who it is said has previously been in prison for manslaughter, is reported to have been found guilty on three charges, of performing illegal operations and to have been sentenced, October 28, to serve from one to fifteen years in Marquette Prison.

MINNESOTA

Personal.—Dr. Charles E. Smith, Jr., St. Paul, was elected executive officer and secretary of the state board of health, October 14, succeeding Dr. Henry M. Bracken, resigned.

Mayo Properties Association Formed.—The formation of the Mayo Properties Association was recently announced at Rochester. Drs. William J. and Charles H. Mayo have turned over through gift, all the clinic properties, real and personal, and all funds and endowments to the association, which is to be a holding corporation to perpetuate for all time the Mayo Institution. The management of the clinic will be unchanged, and Drs. William J. and Charles H. Mayo, Henry S. Plummer, Edward S. Judd, and Donald C. Balfour, and their assistants, will continue to devote their entire time to the clinic.

Failure to Report Venereal Disease.—The Minnesota State Board of Health is following up all cases of failure to report venereal diseases. When an omission to make such a report is discovered, a letter is addressed to the physician responsible in order to give him an opportunity to make the necessary report. In a recent instance a complaint was filed against a physician treating many cases of this class and who ignored letters from the board urging him to report them. The physician was found guilty and fined. This case is a precedent establishing the validity of the regulations requiring these reports.

MISSISSIPPI

Personal.—Dr. W. E. Noblin, Yazoo City, has been appointed health officer of Yazoo City to fill the unexpired term of Dr. James B. Anderson, resigned.——Dr. Thomas E. Royals, Meridian, has succeeded Dr. James Bennett as county jail physician of Lauderdale County.

New Officers.—At the annual meeting of the Mississippi State Public Health Association, held in Jackson, October 22 and 23, the following officers were elected: president, Dr. William H. Frizell, Brook Haven; vice presidents, Drs. Thomas E. Hewitt, Amite County, Paul G. Cope, Columbia, and Thomas L. Underwood, Monroe County, and secretary-treasurer and executive officer, Dr. Waller S. Leathers, University. The meeting for 1920 will be held in Jackson. ——At the semiannual meeting of the Homochitto Valley Medical Association, whose membership is composed of physicians from Adams, Amite, Jefferson and Wilkinson counties, held in Natchez, October 9, the following officers were elected: president, Dr. Charles E. Catchings, Woodville; vice presidents, Adams County, Dr. J. W. Dix; Amite County, Dr. H. K. Ritter; Franklin County, Dr. C. G. Mullins; Jefferson County, Dr. J. M. Barrier, and Wilkinson County, Dr. Charles E. Catchings, Woodville.

MISSOURI

New Board Appointments. — Governor Gardner has appointed Judge J. G. Greensfelder of Kirkwood, Rev. E. F. Leake of Springfield and Col. J. A. Corby of St. Joseph, members of the board of charities and corrections. The board recently inspected the eleemosynary institutions of the state. Mr. J. L. Wagner, secretary of the board, announces that nearly all the circuit judges have appointed probation officers for the counties to meet the provisions of the law recently enacted for the protection of children.

Changes in Washington University Faculty.—Dr. Eli Kennerly Marshall, Jr., Washington, D. C., formerly associate professor of pharmacology in Johns Hopkins University, has been appointed head of the department of pharmacology at Washington University Medical School; Dr. Evarts A. Graham has assumed his duties as professor of surgery; Dr. Ernest Sachs has been promoted to professor of clinical neurological surgery; Dr. Leland B. Alford has been promoted to associate in clinical neurology, and Drs. Drew W. Luten and William H. Olmstead, St. Louis, to instructors in clinical medicine. In addition to these changes, the following appointments have been made: A. W. L. Bray, associate in anatomy; Alfred C. Kolls, associate in pharmacology; Edgar Allen, instructor in anatomy; Edward A. Doisy, instructor in biological chemistry; Frederick Eberson, assistant in dermatology; Dr. Arthur E. Strauss, assistant in clinical medicine; Dr. Lionel S. Luton, assistant in clinical medicine; Dr. Isaac D. Kelly, Jr., assistant in clinical otology, and Drs. Frederick O. Schwartz, Harvey D. Lamb and Lawrence T. Post, assistants in clinical ophthalmology.

NEW JERSEY

Physician's License Revoked.—The New Jersey State Board of Medical Examiners, Oct. 20, 1919, it is reported, revoked the license of Dr. I. Alfred Lawrence, Elizabeth, to practice medicine and surgery in the state of New Jersey, on a charge of criminal abortion.

New Officers.—Camden County Medical Society held its annual meeting at Camden, October 14, and the following officers were elected: president, Dr. Edward B. Rogers, Collingswood; vice president, Dr. Joseph E. Roberts, Camden; secretary, Dr. Daniel Strock, Camden; assistant secretary, Dr. William H. Pratt, Camden, and treasurer, Dr. Milton M. Osmun, Camden.——The centennial meeting of the Cumberland County Medical Society was held at the Cohansick Country Club, October 6. The following officers were elected: president, Dr. Leonard F. Hatch, Vineland; vice president, Dr. Charles E. Sharp, Port Norris; secretary, Dr. H. Garrett Miller, Millville, and treasurer, Dr. W. Leslie Cornwell, Bridgeton.

NEW YORK

Rochester Districted.—In a communication addressed to the Commissioner of Public Safety, Health Officer George W. Goler, Rochester, suggests a tentative program for combating an outbreak of any epidemic disease which may occur in the city. The plan contemplates the organization of an emergency corps of twenty-five or more physicians, and of a group of more than twenty-five nurses who will constitute an emergency reserve corps. The central organization will be at the health bureau where there will be a twenty-four-hour telephone service. The city has been divided into twelve districts in which there is a health physician, and in which an emergency health station has been located either in the police station or fire house. At the central station of the health office a list of all vacant beds in the hospitals for men, women and children will be filled each day.

New York City

Health Department Provides New Positions.—The 1920 city budget provides for the following: for new positions in the drug addict bureau an appropriation of $43,030; ten positions at Bellevue Hospital, including a medical superintendent at $2,520, a dietitian at $2,500, and an investigator at $1,800.

Semicentennial Anniversary of Dermatologic Society.—The New York Dermatological Society, which is said to be the oldest dermatologic society in existence, celebrated its fiftieth anniversary with a dinner at the Yale Club, November 8, at which Dr. George Henry Fox, one of the oldest members of the society, delivered an address.

Personal. — Dr. William Lintz, Brooklyn, has been appointed chief of the medical staff of the Bikur-Cholim Kosher Hospital, Brooklyn, succeeding Dr. Henry Joachim, resigned.——Dr. Alexis Carrel, who has completed four years' service with the French army hospitals, has returned to this country to resume his work with the Rockefeller Institute.

To Improve Nutrition of Schoolchildren. — Arrangements have been made for cooperation between the bureau of child hygiene of the department of health and the department of education for the working out of plans designed to improve the nutrition of schoolchildren. In general it is expected that a campaign of health education will be started throughout the city with particular reference to the undernourishment of schoolchildren. Lectures on dietetics will be given and the physicians and nurses of the department of health will examine the undernourished children and take measures necessary to correct physical defects when found. School lunches will be started as soon as possible, and general systematic weighing of the children will be part of the program. Surveys are now being made in thirty-five schools in Manhattan for the purpose of ascertaining the percentage of children attending these schools at the present time who are suffering from malnutrition.

NORTH CAROLINA

Personal.—Dr. John Hey Williams, Asheville, one of the oldest and most esteemed practitioners of North Carolina, suffered a cerebral hemorrhage, October 23, and is still in a serious condition.

Health Inspectors Named. — The bureau of sanitary engineering and inspection of the state board of health has announced the selection of L. A. Allen, High Point; H. M. Fowlkes, Rockingham; Claude Hussey, High Point; H. G. Blackwell, Wake Forest; T. J. Moseley, Raleigh; W. J. Steele, Salisbury; A. M. Surratt, Denton; L. G. Whitley, Elm City, and G. E. Hapgood, Fall River, Mass., as sanitary inspectors to administer the state sanitary law. The state has been districted and one inspector will be placed in charge of each district of approximately ten counties.

Hospital Items.—Waynesville Hospital has been incorporated with $25,000 capital authorized and $2,000 subscribed by Thomas Stringfield and others.——Wilmington is to have a new hospital to be known as St. John's Sanitarium, and to be conducted under the direction of Dr. John F. Miller, Ashboro, and John T. Hoggard, Atkinson. A campaign is being launched to raise funds for the completion of the Ellen Fitzgerald Hospital, now in course of construction at Monroe.——A movement is on foot at Dunn to raise $100,000 for the erection and equipment of a modern hospital.

The initial subscription of $50,000 was given by Mr. J. D. Barnes of Dunn.

OHIO

Illegal Practice of Medicine.—Mrs. Helen Platz, Cleveland, charged with the unlawful practice of medicine, is said to have been released on a suspended sentence on her promise to discontinue practice.

Hospitals Must Register.—Of the 300 hospitals of the state more than 200 have already filed the necessary blanks with the health department in obedience to the law recently passed, directing the department of health to define, and classify hospitals and to make a survey of the state hospital facilities.

Women Physicians Organize.—Women physicians of Toledo met, October 22, and organized the Women's Medical Club of Toledo with an initial membership of sixteen, and elected the following officers: president, Dr. Lamora Shuey; secretary, Dr. Bertha King Hobart, and treasurer, Dr. Maude L. Marks.

Examination for District Health Commissioners.—The new district health commissioners, to be appointed in each county, are to receive their civil service examinations at the hands of an extra state constituted board, consisting of five public health experts. This special examining board, as announced by the state civil service commission, will consist of Dr. Allan J. McLaughlin and Dr. L. L. Lumsdon of the United States Public Health Service; Dr. W. S. Rankin, executive officer of the state board of health of North Carolina; Dr. Otto P. Geier, industrial physician of Cincinnati ,and Mr. Sherman Kingsley, secretary of the Cleveland Welfare Federation. Applications for health commissionerships should be addressed to the state civil service commission. Applicants will not be assembled for examination, but each will be required to submit a statement as to experience and a thesis or published article on a public health subject.

PENNSYLVANIA

Safety Campaign.—Other communities are following Philadelphia's lead in connection with the campaign for personal safety. The Bethlehem Chamber of Commerce, which is sponsored by Charles M. Schwab, will conduct a "cross at crossings" campaign similar to the one now being observed in Philadelphia.

Western Pennsylvania World War Officers Organize.—The Western Pennsylvania Association of Medical Officers of the World War was organized at Pittsburgh, July 31. Dr. Lawrence Litchfield, Pittsburgh, was elected president, and Dr. Theodore Baker, Pittsburgh, secretary. Any physician who reported for active service in the United States Army, Navy, or Public Health Service or the service of the Allies of the United States is eligible for membership.

Philadelphia

Sculpture and Anatomy.—At the meeting of the Section on Medical History of the College of Physicians of Philadelphia, held November 15, Fielding H. Garrison, Lieut.-Col., M. C., U. S. Army, Washington, D. C., and Dr. Edward C. Streeter, Boston, presented a paper on "Sculpture and Paintings as Modes of Anatomical Expression."

Personal.—Dr. R. Randolph Paxson has been appointed by Director Krusen, first assistant resident physician in the Hospital for Contagious Diseases.——In the list of officers nominated at the business meeting of the Philadelphia County Medical Society, held October 15, the name of Dr. J. Norman Henry for first vice president was unintentionally omitted by the printer.

The Gross Prize.—The Philadelphia Academy of Surgery announces that essays in competition for the Samuel D. Gross Prize of $1,500 will be received until Jan. 1, 1920. The stipulations are that the prize "shall be awarded every five years to the writer of the best original essay not exceeding 150 printed pages, octavo in length, illustrative of some subject in Surgical Pathology or Surgical Practice, founded on original investigation." The candidates for the prize must be American citizens, "the competitor who receives the prize shall publish his essay in book form, shall deposit one copy of the work in the Samuel D. Gross Library of the Philadelphia Academy of Surgery and on the title page it shall be stated that the essay was awarded the Samuel D. Gross Prize; the essay must be written by a single author in the English language, must be typewritten, distinguished by a motto, and accompanied by an envelop bearing the same motto, containing the name and address of the writer, and must be sent to the trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care College of Physicians of Philadelphia, 19 South Twenty-Second Street, Philadelphia, on or before Jan. 1, 1920."

TENNESSEE

Dispensary for Drug Addicts Opens.—A dispensary has been opened at Memphis, by the city health department, under Dr. James L. Andrews, at which drug addicts may be treated.

Hospital Item.—The Jewish people of Memphis are launching a movement to erect a $350,000 hospital, primarily for Jews in Tennessee, Mississippi and Arkansas, but accepting patients from all denominations. There will be 100 beds, one fourth of which will be for charity patients.

Office Building for Physicians.—The Doctors' Building Company has been organized at Memphis by Justin D. Towner and others, and an option has been secured on a site at Court Avenue and Third Street, on which it is proposed to erect a building to cost $200,000. The building committee consists of Dr. Max Goltman, Elby T. Martin and Charles D. Smith, and the finance committee of Dr. Edwin D. Watkins, John T. Ogden, and Dr. John L. Jelks.

TEXAS

Funds for Public Health Work.—The executive secretary of the Texas Public Health Association announces that $180,000 will be available to the association, during 1920, for the fight against tuberculosis and the betterment of the general health conditions in the state. This amount will be realized from the sale of the Red Cross Christmas Seals, which began, November 1.

Hospital Items.—The Benevolent War Risk Society has decided that the sanatorium for the Texas soldiers afflicted with tuberculosis shall be located at Carlsbad. The responsibility for raising $500,000 for building and equipping the sanatorium is placed with the service that had charge of the draft in Texas, with Major John E. Townes of Houston as supervisor.——The Mexia Commercial Club has agreed to raise $2,500 for the purpose of aiding the physicians of the city in their movement to build a sanatorium.

VIRGINIA

Personal.—Dr. William H. Evans, Lynchburg, has been commissioned first lieutenant, M. C., Virginia National Guard, and has been assigned to duty with the local National Guard company.——Dr. Charles V. Carrington, Norfolk, was operated on at St Elizabeth's Hospital, October 24, for duodenal ulcer.—Dr. H. Stuart Smyth, Plasterco, was painfully injured in a collision between his automobile and a wagon, September 25.

State Association Meeting.—The Medical Society of Virginia held its fiftieth annual meeting in Richmond, October 28 to 31, under the presidency of Dr. Ennion G. Williams, Richmond. A feature of the opening session was the address on "The Semicentennial History of the Medical Society of Virginia," by Dr. John N. Upshur, Richmond. Petersburg was chosen as the next place of meeting, and the following officers were elected: president, Dr. Paulus A. Irving, Farmville; vice presidents, Drs. Marshall J Payne, Staunton; George T. Klipstein, Alexandria, and George J. Williams, Newport News. Dr. Irving has served as secretary of the state association continuously since 1910.

Hospital Notes.—The G. B. Johnston Memorial Hospital, which was formally dedicated at Abingdon, is a tribute to the memory of the late Dr George Ben Johnston, who developed a hospital at that place. After his death the people of that section raised money and built this new hospital. The capacity is fifty beds.——The Lynchburg Chamber of Commerce has agreed to contribute $50,000 for the proposed Baptist Hospital provided the Baptist general convention of Virginia will locate the hospital in Lynchburg.——The Providence Hospital Association, Danville, has secured a site on South Main Street on which there is already a two-story brick building. Additions will be made to this building, and it will be remodeled, so that the institution will accommodate thirty patients. The improvements on the building will cost $10,000, and it is expected that the hosptial will be ready to receive patients in January.——The University of Virginia, Charlottesville, has asked the legislature for improvements costing neary $300,000, to include a new dormitory for first-year men, a new medical building, and an isolation ward for contagious diseases for the University Hospital.

GENERAL

Interprofessional Conference.—An interprofessional conference is announced to convene at the Hotel Statler, Detroit, at 11 a. m., November 28, and to continue two days. The conference is organized at the invitation of the postwar committee on architectural practice to bring the professions together in order to plan more effective relations to each other and to the social problems of the day.

Treasury Decision on Alcohol Prescriptions.—Treasury Decision No. 2940, which has just been issued by Daniel C. Roper, commissioner of internal revenue, provides that under the new prohibition enforcement act, physicians who make application for intoxicating liquor must make an application for permit on Form No. 737 and must make a statement that the liquor is for use in the course of their professional practice only, and that it is to be used either in the compounding of medicines or for use without change for nonbeverage purposes only. If more than 2 quarts are purchased in any one year, bond will be required.

Milk Commission Elects Officers.—At the annual meeting of the American Association of Medical Milk Commissions, which has been holding its meetings concurrently with those of the American Public Health Association, Dr. Laurence R. DeBuys, New Orleans, was elected president; Dr. Ben C. Frazier, Louisville, Ky., secretary-treasurer, and Drs. Arnold F. Furrer, Cleveland, Louis C. Ager, Brooklyn, and Walter S. Haines, Chicago, members of the association council. At this meeting the employment of a field inspector was recommended and a committee was appointed to consider affiliation with the American Public Health Association.

Meeting of Western Surgical Association.—The twenty-ninth annual meeting of the Western Surgical Association will be held in Kansas City, December 5 and 6, under the presidency of Dr. Roland Hill of St. Louis. This year's meeting will be held during the same week and at the same place as the association of Rock Island railway surgeons. Thomas S. Cullen, Baltimore, professor of gynecology in Johns Hopkins University, will be the guest of the association. The headquarters will be at the Muehlbach Hotel, where the sessions will also convene. The annual banquet will be held on Friday, December 5. Dr. Howard Hill, Rialto Building, Kansas City, is chairman of the committee on arrangements.

Investigation of Influenza.—The Metropolitan Life Insurance Company has provided resources to carry on investigations into the cause, mode of transmission and treatment of influenza and its complications. A commission has been appointed consisting of Dr. George W. McCoy, director of the hygienic laboratory, U. S. Public Health Service, Washington, D. C.; Dr. William H. Park, director of the research laboratory, New York City Department of Health; Lee K. Frankel, third vice president of the Metropolitan Life Insurance Company; Dr. A. S. Knight, medical director of the Metropolitan Life Insurance Company; Dr. Milton J. Rosenau, Boston, chairman, professor of preventive medicine and hygiene, Harvard Medical School. Later, Prof. Edwin O. Jordan, of the University of Chicago, and Dr. Wade H. Frost, of the U. S. Public Health Service, Washington, D. C., were invited to join in the work. Work has already been begun in Washington, New York, Boston, and Chicago and may be extended to other places as occasion arises.

Outbreaks of Food Poisoning Traced to Ripe Olives.—A recent outbreak of food poisoning at a country club near Canton, Ohio, in which eight deaths occurred, was traced by an official of the state department of health to the eating of ripe olives. *B. botulinus* was found in the olives, and extremely small quantities of the olives and of the liquor in which they were contained were extremely toxic to guinea-pigs. A recent outbreak of food poisoning in Michigan, causing five deaths, was traced to the same source, and the same findings were recorded. Following this last outbreak the state department of health and the dairy and food bureau of the agricultural commission issued a joint statement, which was given wide publicity, warning against the use of ripe olives and forbidding their sale until further investigations had been made. It is alleged that the authorities in Michigan found *B. botulinus* in samples of ripe olives on the shelves of various stores. An extensive investigation is being made by the state department of health to determine whether ripe olives now on sale in Ohio are safe for consumption.

FOREIGN

International Congress of Electrology and Radiology.—It is announced that the Seventh International Congress is to be held at Paris in August, 1920, with Dr. Oudin to preside.

Typhus in Siberia.—A representative of the American Red Cross, who has been in West Siberia for six months, reports that the cases of typhus fever among the Siberian troops, since January 1, have aggregated 120,000, and that since July 1, 40,000 cases have occurred. Near Omsk, 30,000 persons are without shelter, and sanitary conditions are reported as frightful.

Italian Radiology Congress.—The first meeting of the Italian Society for Medical Radiology since the beginning of the war was held recently at Genoa, with E. Maragliano, professor and senator, presiding. Professor Ghilarducci of Rome opened the discussion on the biophysical bases of radiotherapy; Professor Ceresole of Venice on the dosimetry in radiology, and Professor Alessandrini of Rome on radiology in pulmonary tuberculosis. An exhibition of electric appliances was held in connection, and the army, the navy and the Red Cross were all officially represented.

Training of Nurses in France.—The *Journal de Médecine de Bordeaux* publishes a notice from the Florence Nightingale Training School for Nurses in that city that the American Red Cross and Vassar College have founded some scholarships at the school for the benefit of young women wishing to take the course of training. The preference will be given to daughters of physicians living at home in Bordeaux or living at the school if they come from a distance. The school gives training not only for hospital and dispensary nursing, but for home visiting nurses and supervision of schoolchildren. The stipend allowed is 110 francs per month during the two years of the course.

German Physicians Oppose Plan to Make Them State Employees.—The *Nederlandsch Tijdschrift* states that at the forty-first annual representative meeting of the medical profession in Germany, the *Aerztetag*, to be held at Eisenach, the president of the Leipzig League was to speak on contract practice; Mugdan, member of the National Assembly, on the "socialization" of the practice of medicine; Schwalbe on reform in medical education, and others on measures to repress quackery and on social insurance. The cable has reported since that the delegates voted unanimously against the government's proposal that all physicians should be made state employees. The chief argument presented against the plan is the necessity for physicians to maintain confidential relations with their patients.

Deaths in the Profession Abroad.—Dr. **A. Rovighi,** professor of medical pathology at the University of Bologna, aged 63. He has published numerous works on disease of the spinal cord and of the brain, on the murmur with stenosis of the right branch of the hepatic artery, etc., and he is said to have been the pioneer in demonstrating the cirrhosis-inducing properties of indol and skatol.——Dr. **B. Brunacci,** instructor in physiology at the University of Rome, aged 39. ——Dr. **V. Tedeschi,** professor of pediatrics at the University of Padua and a leading organizer in various fields of welfare work for children, aged 65.——Dr. **U. Gosselin,** professor of physiology at the University of Caen.——Dr. G. **Marchesi,** professor of pathology at the University of Rome. ——Dr. **M. Gangolphe,** formerly professor at the University of Lyons, aged 61.

LATIN AMERICA

Yellow Fever in Nicaragua.—The sanitary authorities of Guatemala have established a quarantine against ships arriving from Corinto, Nicaragua, on account of the occurrence of several cases of yellow fever in the latter place.

Foot and Mouth Disease in Uruguay and Argentina.—On account of an epidemic of aphthous fever among the cattle of some of the ranches of Uruguay and Argentina, the packing houses have been compelled to reduce their operations.

Cyclone Damages Hospital in Chile.—The *Revista de Beneficencia Pública* of Santiago, Chile, reports that a recent cyclone destroyed one of the wards of the hospital at Chimbarongo, besides damaging some of the other parts of the building.

New Hospital for Panama.—Plans are being prepared for the new Santo Tomas Hospital, which was commenced by the republic of Panama, November 1. This institution is to be located on the beach in the suburbs of the city of Panama in the center of a tract of about 20 acres. The main building will be four stories in height and will be of concrete construction. The estimated cost of the hospital is $600,000.

Medical Society Meeting.—The 174th meeting of the Ancon Medical Society was held in the administration building, Ancon Hospital, October 18. A program largely devoted to problems arising in the laboratory service of the American Expeditionary Forces was presented. Col. H. C. Clark, who was actively engaged with the Chemical Warfare Service during two years, presented a very interesting summary of his experiences.

Deaths in the Profession.—Dr. **L. Felipe Mujica,** physician in chief of the Hospital de Salvador, Santiago, Chile. He succumbed suddenly to pulmonary edema while making his rounds.——Dr. **J. M. Espín** of Santiago, Cuba, recently serving in the national laboratory of the public health service.——A cablegram from Rio de Janeiro announces the death of Dr. **Jaime Campello,** one of the most prominent Brazilian physicians.

Municipal Drug Store.—The officials of the Asistencia Pública of Santiago, Chile, are now considering the feasibility of founding a pharmacy to be open to the public day and night to sell drugs and fill prescriptions at cost price plus a percentage to cover costs of operating and 10 per cent. for deterioration and losses. The *Revista de Beneficencia Pública* declares that something of the kind is indispensable on account of the high prices of drugs and the increasing difficulty in controlling the practices of the present proprietors of the pharmacies.

Smallpox in Havana.—Although the smallpox epidemic seemed to be decreasing and the total number of cases is very small, five new cases were reported, November 5 and 6. Eighty-two blocks of the city have been quarantined. Among the several measures adopted to eradicate the epidemic, are the vaccination of all steerage passengers coming from the United States, the establishment of a quarantine against ships from New Orleans, the enforcement of compulsory vaccination in Havana, and the closing of public schools. It seems that smallpox was introduced by the merchant ship *Venezia* from Spain, one of the passengers being taken sick with smallpox thirty-six hours after landing.

Government Services

Personnel of the Medical Department

Up to Nov. 7, 1919, 28,269 officers had been discharged from the Medical Corps of the Army, from a total of 30,591 on active duty Nov. 15, 1918. There were 3,737 officers in the reserve corps, an increase of sixty over the previous week.

Legislation to Increase Pay of Medical Officers

An increase of 10 per cent. in the base pay of all members of the Army and Navy Medical Corps, for both commissioned officers and enlisted men, and also for members of the U. S. Public Health Service is provided for in Senate Bill No. 3383, introduced by Senator James W. Wadsworth of New York, chairman of the Senate Committee on Military Affairs. The same measure provides for an increase in pay for the members of the Female Nurse Corps of the Army and Navy to the extent of 50 per cent. The compensation for officers on the retired lists would be computed with this increase included in their basic pay. The measure has been referred to the Senate Committee on Military Affairs for action.

Surgeon-General Braisted Elected Fellow of the Royal College of Surgeons of Edinburgh

On October 15 Surgeon-General William C. Braisted of the U. S. Navy Medical Corps was elected an honorary fellow of the Royal College of Surgeons of Edinburgh. At the same time the Director Generals of the British Medical Services and of the Belgian, French, Italian and Japanese medical services were honored with membership.

MEDICAL OFFICERS, U. S. NAVY, RELIEVED FROM ACTIVE DUTY

NEW YORK

Brooklyn—Brahdy, L.
Little Falls—Drake, N. L.

PENNSYLVANIA

Masontown—Johnson, S. L.

WASHINGTON

Manette—LaMotte, H.

Foreign Correspondence

PARIS LETTER

PARIS, Oct. 16, 1919.

Appropriations for French Universities

The minister of public instruction has introduced in parliament a bill covering an appropriation of 12,126,000 francs for the benefit of the universities, to be used in the construction of new buildings, for repairs to old buildings, and for the installing of scientific equipment. This demand for an appropriation is in connection with work which has already been begun but which was interrupted by the war. The institutions mainly concerned are the Universities of Paris, Nancy, Grenoble, Lille and Poitiers. The sum designated for the University of Paris exceeds 10,000,000 francs. The minister of public instruction also demands 900,000 francs in order to complete the construction work at the Institute of Applied Chemistry; 5,243,000 francs for the extension of the work of the departments of chemistry; 800,000 francs for the enlargement of the Radium Institute, and 1,500,000 francs for the construction of a laboratory of physical chemistry, etc.

Milk for Infants and for the Sick

The *Journal officiel* publishes the following order:

All hotels, boarding houses, restaurants, cafés, coffee-houses, dairy-lunch establishments, lunch counters, canteens, tea rooms, and all other establishments serving food and beverages, are hereby prohibited, as of Oct. 15, 1919, from serving or from using fresh milk or fresh sweet cream in the preparation of any beverage, such as tea, coffee or cocoa.

In the report that precedes the text of the foregoing order, M. Noulens, minister of agriculture and of food control, explains that this measure is justified by the fact that a scarcity of fresh milk is beginning to be felt at the approach of winter, and likewise by the necessity of assuring to infants and the sick an adequate supply, since for these two classes milk is indispensable. The aforementioned establishments will, however, still be privileged to serve condensed milk. As I have already mentioned in previous correspondence, special milk tickets have been brought into use which insure preferential treatment in case there are infants, old persons or the sick to be provided for.

Operative Treatment of Cancer of the Cervix of the Uterus

At the first meeting of the Association des gynécologues et obstétriciens, held recently in Brussels, one of the six subjects discussed was operative treatment of cancer of the cervix.

Dr. Forgue, professor of clinical surgery at the Faculté de médecine de Montpellier, recommends, as the operation of choice in this condition the following technic: Along with the whole uterus as much of the parametrium as possible should be removed, the dissection about the ureters having been previously made. Excision of the upper part of the vagina should be done. The advantage lies with hysterectomy by the upper route, abdominal hysterectomy, or, more exactly, vagino-abdominal hysterectomy, for the operation is begun in the vagina, keeping well away from the cervix, since by this means the vagina is excised beyond the suspected region; the raising of the uterus is facilitated, and, by first opening the vesico-uterine culdesac and Douglas' pouch, the excision of the pericervical region is simplified for the abdominal stage of the operation. One must use every precaution to prevent peritoneal infection originating from the ulcerated cervical neoplasm. The surest guarantee against infection lies in closing the cervical canal by suture before the uterus is removed. The vagina should also be securely roofed over. There are two ways of accomplishing this: (1) by the abdominal route alone, the incision of the vagina being done while the ulcerated lesion is held down firmly by two stout tenaculum forceps, and (2) by the vagino-abdominal route, the preliminary operation being begun in the vagina, a circular incision of the vagina being made and the vaginal segment of the cervix dissected away from below upward; the cervical canal is sutured securely, so that when the uterus is lifted from the abdomen there is no danger of spreading infection to the surrounding parts.

As for the matter of recurrences, these occur most frequently during the first year after the operation (more than

half of the cases); during the second year there are recurrences in 25 per cent. more of the cases. So, we may say, if the patient goes three years without a recurrence the chances of recovery are good. The recurrences, moreover, appear especially frequent and rapid in cancer of the uterus in young women, in cancer in women having a hereditary taint well established, and in cancer in pregnant women.

BELGIAN LETTER

LIÉGE, Oct. 19, 1919.

Meeting of Gynecologists at Brussels

In my preceding letter (THE JOURNAL, Oct. 18, 1919, p. 1228) I stated that Belgian physicians were gradually becoming more active. The communications addressed to the academy and the meetings of the principal medical societies were only a prelude to the activity in medical circles that the month of September was to show. From September 25 to 27, at the time the Belgian Surgical Congress was being held, the first meeting of the Association des gynécologues et obstétriciens de langue française took place in Brussels. It was a special honor conferred on our country that our capital should have been chosen for the first meetings of this puissant society of learned men of French tongue. The variety and significance of the subjects brought up for discussion helped to give this congress a high degree of importance, for most of the current problems of gynecology and obstetrics were studied into and discussed at length. [Our Paris correspondent, in his reports published this week and last, covered most of the papers at this meeting.]

Indications and Technic of Hysterectomy in the Treatment of Adnexal Suppurations

Faure and Bégouin, in a well illustrated report, pointed out the operative indications for hysterectomy. Leaving out of consideration acute infections that may be cured without operation, and chronic infections that can be treated by colpotomy, the uterus should be removed in the case of multiple abscesses, the Douglas pouch filled with pus, or bilateral suppurating adnexa. The authors recommend in very decided terms subtotal hysterectomy except in cases of inflamed cervix combined with suppuration, pain and the menace of carcinoma; however, such cases are rare, and the dangers of the complete removal of the uterus are infinitely greater, Faure and Bégouin believe, than of the subtotal removal. The technic of the operation is based on the fundamental principles of pathologic anatomy. The adhesions are found chiefly above, in front and behind. The operation should be begun, then, with the free part, that is, from below and from within, and proceed in a forward direction. This manner of procedure affords better protection to the ureter. This point decided, there are four ways of proceeding with the operation: (1) hysterectomy by posterior or preferably anterior incision of the cervix; (2) the Kelly procedure, in which the surgeon passes from the adnexa on one side to the uterine body and thence to the adnexa on the other side; (3) the Terrier procedure; (4) bisection of the uterus in case of bilateral adherent adnexa.

The Belgian authors, Mayer, Schockaert and Henrotay, as well as Hartmann and Walther of Paris and Recasens of Madrid, prefer complete hysterectomy in case of adnexal suppuration. All emphasize the paramount importance to be ascribed to peritonization.

The Value of Various Incisions Used in Laparotomies by the Gynecologist and the Obstetrician

M. Rouffart of Brussels ended his report with these conclusions:

1. The median longitudinal incision, while it takes account of all the exigencies connected with the act of operation, sometimes results in hernia, and this is especially frequent when the wound heals by second intention.

2. Every median longitudinal incision should be sutured in such a manner as to permit the reenforcement of the cicatrix by the muscular tissue of the recti abdominis.

3. Extramedian longitudinal incisions which sever the muscles and disturb their nutrition through section of the nerves are contraindicated as predisposing to hernia.

4. The superiority of the transverse incision over the longitudinal incision from the anatomic and clinical standpoint will cause it to be chosen in the majority of gynecologic and obstetric laparotomies.

These conclusions provoked considerable discussion and did not receive unqualified approval. The French school especially, headed by Faure, Walther, Brindeau and Bégouin, was inclined to favor the longitudinal incision.

Protection for Women Workers

M. Keiffer of Belgium, in his report on protection for women workers, gave his hearty support to the protective measures suggested by the Academy of Medicine of Paris at its meeting of March 6, 1917. M. Levy Solal demands, in order that the protective measures may be effective, that pregnancy be made reportable by law. Every woman worker should be compelled to give up her work in the factory, or elsewhere, when pregnancy is six months advanced and while nursing her baby. In compensation she should be allowed a special indemnity by the state. Medical surveillance of the homes should be organized, and deserted women should be given ample protection. In order to carry out these ideas, institutions should be established where mother and child might be hospitalized.

A Successful First Meeting

This first meeting of the Association des gynécologues et obstétriciens de langue française, held in Brussels, was crowned with success and may doubtless be taken as a harbinger of the rebirth of scientific activity in our country.

LONDON LETTER

LONDON, Oct. 15, 1919.

The Prevention of Venereal Disease

As previous letters to THE JOURNAL show, the prevention of venereal disease has been under discussion for some time. The ministry of health has decided that the official recognition of self-disinfection in civilian venereal disease is neither desirable nor practicable, but recommends the establishment of centers for delayed disinfection. This attitude has provoked a protest in the *Times* from a number of leading physicians who have formed themselves into a venereal prevention committee. They point out that provision of centers for delayed disinfection can never be adequate. The London County Council, the greatest urban authority in the country, has rejected the scheme. No method is even suggested that could work in rural districts. The committee maintains that venereal disease is preventable by immediate disinfection; that authoritative teaching on the subject is urgently required, and that the means, together with approved instructions for their use, should be readily accessible to the public. They fail to recognize any moral distinction between the provision for delayed disinfection at centers and the provision for immediate self-disinfection. One of the members of the committee, Sir Archdall Reid, has put forward in the *Times* the proposal that "brief and clear instructions for swift personal disinfection shall be posted in public lavatories." He is also publishing a book on the medical prevention of venereal disease in which he says: "Instructions, of which the really effective part was conveyed by posters, were given to soldiers inhabiting a group of barracks in a large seaport. The force usually present averaged 2,000, and 20,000 passed through these barracks in two years. Not one man who followed instructions acquired disease, and only seven men, all of whom failed to follow instructions, acquired disease. The rate of infection was therefore 1.75 per thousand per annum. In a still larger naval unit not one man who followed instructions acquired disease, and only one man failed to follow instructions. In a large military hospital for venereal diseases not one man of all those who passed through it had acquired disease after immediate disinfection, but nearly every patient had practiced 'early treatment.' In India and South Africa, results equally remarkable have been achieved by the same simple and inexpensive method. I believe there is not on record a single instance of the failure of the method of quick disinfection. The operation is actually about as difficult and dangerous as washing the hands with soap and water." The method referred to is careful sponging with a solution of 1:2,000 potassium permanganate. Sir Archdall Reid considers that more elaborate methods, such as urethral injections and the use of calomel ointment, are unnecessary.

Crowded Medical Schools

Students released from army service are flocking to the universities, some of them as freshmen, others to resume studies interrupted by the war. The number of medical students is particularly large, and in some cases in excess of the accommodations. In London the average attendance before the war was between 1,400 and 1,500; this session has begun with 2,000. In addition to men demobilized from the army, freshmen have come from all parts of the world. The accommodations are generally sufficient, but some schools

are unusually crowded. In Edinburgh the session is a record one in point of attendance. The rush of students has been so great that 300 have had to be refused admission. During the war, women students flocked to the university: last year half of the medical students were women. The authorities realize the need for expansion of the buildings, and schemes are in hand for erecting a new chemical department and also for the establishment of a Lister institute for pathologic teaching. In Glasgow the accommodations are taxed to the utmost. New enrolments cannot be accepted for the winter session except in the case of students returning to their studies from active service.

Women Physicians

There are now over 2,250 women studying medicine in this country—an enormous increase over the number before the war. There are over 1,000 women physicians in practice, and the prospect is that at the end of five years the number will be doubled, which opens the prospect of overcrowding.

Scottish Vital Statistics

The vital statistics of Scotland for the year 1917, which have just been issued, are remarkable. The birth and death rates were the lowest recorded. The births registered numbered 97,441, which was less than in all years since 1856. The birth rate of the year was 20.07 per thousand. Marriages registered 30,482, which number was 2,180 less than the mean of the preceding ten years. The marriage rate of the year was 6.28 per thousand, which was 0.62 below the mean of the preceding ten years, and was the lowest Scottish marriage rate since 1887. Deaths registered numbered 69,483, which was 5,017 less than the mean of the ten preceding years. The death rate of the year was 14.31 per thousand, as already stated, the lowest rate recorded. The infant mortality rate of the year was 107.5 per thousand births, being 3.4 below the mean of the ten preceding years. An endeavor was made to verify the ages of all reputed centenarians whose deaths were registered. There were six deaths during the year, and in two of them satisfactory proof of the attainment of the age of 100 was obtained. The number of deaths attributed to typhoid, diphtheria and tuberculosis was smaller in 1917 than in any previous year. Deaths from malignant diseases were more numerous than in previous years.

The Influenza Epidemic in Scotland

The total number of deaths ascribed to influenza during the epidemic in Scotland in the latter part of 1918 and the earlier part of this year was 17,575, a figure which includes not only those deaths of which influenza was the sole named cause, but also those deaths of which influenza was one of two or more named causes, the latter being by far the more numerous. Deaths from influenza and pneumonia in association numbered 11,236 out of the total of 17,575. The mortality from the epidemic greatly exceeded in amount those of epidemics of other infectious diseases, and a large part was among adults, fully 50 per cent. occurring between the ages of 15 and 44, and 23 per cent. between the ages of 25 and 34.

Marriages

PAUL PERROT, French Army Medical Corps, to Miss Norman Derr of Atlanta, Ga., at Clifton Springs, N. Y., November 3.

REUBEN ADOLPHUS MCBRAYER, Sanatorium, N. C., to Miss Louise Ludlow of Winston-Salem, N. C., November 7.

JAMES A. DUGGAN, South Bend, Ind., to Miss Alma Gebhardt Stevenson of Maplewood, N. J., October 30.

GEORGE J. HERMANN, Newport, Ky., to Miss Catherine Nordwich of Alexandria, Ky., October 22.

SOL BERNARD KOSITCHEK, Chicago, to Miss Josephine Kapp, at Battle Creek, Mich., October 30.

WILLIAM PENN VAIL, Philadelphia, to Miss Virginia Moore of San Diego, Calif., October 1.

JOHN LEONARD KANTOR to Miss Ina Duff Downes, both of New York City, October 20.

LOUIS S. DUNN, Chester, Pa., to Miss Sari Rosenberg of New York City, October 28.

FRANK MILAN BARNES, Albion, Neb., to Miss Ruth Burch, at Landers, Wyo., October 8.

LOUIS SAVITT to Miss Bess Sparberg, both of Chicago, October 26.

Deaths

John Young Brown ✦ St. Louis; Bellevue Hospital Medical College, 1887; aged 54; major, M. C, U. S. Army; who served as a member of the General Army Medical Board; city physician of Henderson, Ky., from 1887 to 1891; assistant superintendent of the Central Kentucky Asylum for the Insane from 1891 to 1894; chief surgeon of the Louisville, St. Louis and Texas Railroad; professor of surgery in the St. Louis University; chief surgeon to St. Johns Hospital; surgeon in charge of the St. Louis City Hospital from 1903 to 1907; president of the Mississippi Valley Medical Association in 1896; once president of the American Association of Obstetricians and Gynecologists, Southern Surgical and Gynecological Association and St. Louis Surgical Club; died in Phoenix, Ariz., October 30, from heart disease.

Thomas Barker Eastman ✦ Indianapolis; Central College of Physicians and Surgeons, Indianapolis, 1893; a son of Joseph Eastman, the pioneer gynecologist of the Middle West; died, November 10, from carcinoma; aged 50. He was a member of the American Association of Obstetricians and Gynecologists; professor of abdominal surgery and diseases of women in his alma mater, and later clinical professor of gynecology in the Indiana University School of Medicine, Indianapolis; gynecologist to the Indianapolis City Hospital; surgeon to the Joseph Eastman Hospital; also a member of the staffs of the Methodist and Deaconess hospitals. He was appointed a member of the Indianapolis City Board of Health in 1914.

Clinton Palmer Meriwether ✦ Little Rock, Ark.; Missouri Medical College, St. Louis, 1893; aged 45; secretary of the Arkansas Medical Society; and a member of the House of Delegates of the American Medical Association from 1916 to 1919, inclusive; professor of operative surgery and rectal diseases in the College of Physicians and Surgeons, Little Rock; major, M. C., U. S Army, and honorably discharged, Jan. 4, 1919; who had been ill at the Arkansas Tuberculosis Sanatorium, Booneville, for several months; died at his home, November 2, from tuberculosis.

Henry Kemble Oliver, Boston; Harvard University Medical School, 1855; aged 89; medical inspector of camps under the United States Sanitary Commission during the Civil War; one of the visiting physicians to the Massachusetts General Hospital, and also a member of the staff of the department of laryngology; at one time lecturer on diseases of the throat in his alma mater; who endowed the Henry K. Oliver Foundation for the department of hygiene of Harvard University; died, October 25.

Francis Valk ✦ New York City; New York University, 1878; aged 74; a fellow of the New York Academy of Medicine, and a member of the American Academy of Ophthalmology and Oto-Laryngology; a veteran of the Civil War; consulting surgeon to Thrall Hospital, Middletown, N. Y.; surgeon to the Randall's Island Hospital; assistant surgeon at the Manhattan Eye and Ear Hospital; ophthalmologist to the New York Dispensary; died in St. Luke's Hospital, New York City, November 5.

Michael B. Corrigan, Monticello, Ark.; University of Edinburgh, Scotland, 1871; aged 67; president of the Drew County Medical College; health officer of Drew County; formerly a major, R. A. M. C., with service in India and Africa; for ten years surgeon in the Royal Navy; also a clergyman of the Methodist Episcopal Church; died, October 24, from nephritis.

William Lincoln Shindel ✦ Sunbury, Pa.; Medico-Chirurgical College of Pennsylvania, Philadelphia, 1893; aged 52; formerly president of the Northumberland County Medical Society; surgeon to the Mary M. Packer Hospital, Sunbury, and physician to the Northumberland County Prison; a specialist in proctology; died, October 26, from kidney disease.

William H. Judd, Janesville, Wis.; Bennett Eclectic Medical College, Chicago, 1883; aged 65; once president of the Rock County, Wis., Medical Society; for five terms a member of the city council, and at one time its president and acting mayor of Janesville; was struck by an automobile, October 25, and died in Mercy Hospital, October 26.

Charles Fremont Taylor, Philadelphia; Central College of Physicians and Surgeons, Indianapolis, 1880; aged 63; a member of the Medical Society of the State of Pennsyl-

✦ Indicates "Fellow" of the American Medical Association.

vania; editor of the *Medical World* since 1883; editor and publisher of *Equity*, a quarterly periodical; died at his home, November 4, from disease of the heart and kidney.

Chauncey W. Courtright ✠ Chicago; Cleveland University of Medicine and Surgery, 1877; Northwestern University Medical School, Chicago, 1887; aged 69; a member of the staff of the Englewood, Washington Park, Lakeside and Fort Dearborn hospitals; died, November 9, from carcinoma of the bladder.

Charles Elbert Woody, Springfield, Mo.; Kentucky School of Medicine, 1893; aged 58; for several years physician of Green County; for one term health commissioner of Springfield; clerk of the criminal court of Green County from 1910 to 1914; died in a hospital in Nevada, Mo., October 25.

James Knox Polk Gleeson, Washington, D. C.; George Washington University, Washington, D. C., 1869; aged 75; a member of the Medical Society of the District of Columbia; a veteran of the Civil War; died in the Takoma Park (D. C.) Sanitarium, October 23.

James Welch ✠ Tampa, Kan.; College of Physicians and Surgeons, Kansas City, Kan., 1903; aged 50; a veteran of the Spanish American War; commissioned first lieutenant, M. C., U. S. Army, in recent war; died suddenly in his office, October 16, from heart disease.

Algernon Sydney Garnett ✠ Hot Springs, Ark.; Jefferson Medical College, 1856; aged 86; a pioneer practitioner of Hot Springs; said to have been the last survivor of the crew of the Confederate steamship, *Merrimac;* died, October 30.

Charles Wilbur Patton ✠ Laurel, Iowa; State University of Iowa, Iowa City, 1910; aged 38; who was honorably discharged as first lieutenant, M. R. C., Dec 7, 1918; died, recently, from an overdose of a poisoning drug.

Joseph A. Richmond, Bellevue, Ky.; University of Nashville, Tenn., 1908; aged 37; a member of the Kentucky State Medical Association; died at his home, October 21, from tetanus, due to a punctured wound of the foot.

John Frederick Beiermeister ✠ Rochester, N. Y.; Albany (N. Y.) Medical College, 1910; aged 32; who served as first lieutenant, M. C., U. S. Army, during the world war; died in his office, October 24, from angina pectoris.

Clinton Brotemarkle, Salisbury, Md.; College of Physicians and Surgeons, Baltimore, 1881; aged 59; a specialist in diseases of the eye, ear, nose and throat; died in a sanatorium in Philadelphia, about October 23.

Arthur George Patterson ✠ Lisbon, N. D.; Trinity Medical College, Toronto, Ont., 1889; aged 54; died in the Henrotin Memorial Hospital, Chicago, October 22, from pneumonia following cholecystectomy.

Miller Young, North Liberty, Iowa; Jefferson Medical College, 1873; aged 74; president of the Farmer's Savings Bank, North Liberty; died at Young's Station, near North Liberty, October 25.

Robert H. Jenkins, Hogansville, Ga.; University of Louisville, Ky., 1871; aged 68; also a pharmacist; once representative to the Georgia legislature; died, October 14.

Charles L. Swimley, Roll, Okla.; Starling Medical College, Columbus, Ohio, 1895; aged 50; died suddenly, from heart disease, in Strong City, Okla., October 14.

James Alexander Smart, Fort Covington, N. Y.; New York University, New York City, 1882; aged 61; died, September 24, from chronic nephritis.

Robert Richard Lawrence ✠ Hartford, Mich.; University of Michigan, Ann Arbor, 1875; aged 69; died, September 10, from chronic nephritis.

Eugene Jackson Smith, Harlan, Iowa; Rush Medical College, 1872; aged 70; was found dead in bed in a hotel in Harlan, October 21.

Thomas Primmer ✠ Centralia, Wash.; Trinity Medical College, Toronto, Ont., 1886; aged 65; died, September 4, from heart disease.

Daniel G. Smith, Arkoe, Mo.; American Medical College, St. Louis, 1877; aged 72; died in a hospital in St. Joseph, Mo., October 14.

Charles E. Newcomb, Grantham, N. H.; University of Vermont, Burlington, 1880; aged 63; died, October 1, from heart disease.

John M. Gass, Knoxville, Tenn.; University of Tennessee, Nashville, 1882; aged 83; also a clergyman; died, October 16.

George Vincent Hudson, Brooklyn; New York University, New York City, 1867; aged 76; died, October 24.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE FRAUD ON THE PUBLIC AND ON THE PROFESSION

"PHYLACOGENS"

A physician in Florida writes:

> "I am enclosing a copy of a circular letter just received from Parke, Davis & Company, and will call your attention to a marked paragraph in this letter on which I would like to have an expression of your opinion."

The circular letter which the doctor forwards is devoted to singing the praises of "Pneumonia Phylacogen." It opens with the statement: "Influenza, we learn, has appeared in your section." The paragraph marked by our correspondent reads:

> "Pneumonia Phylacogen has been found to be a dependable means of preventing and treating pneumonic complications of Influenza. In one large city it became a routine measure to give all persons affected with Influenza an injection of Pneumonia Phylacogen as a prophylactic of pneumonia. The results were remarkable. Not only did the cases improve rapidly, but in a great majority of them the pneumonia did not occur."

The "Phylacogens" were repeatedly discussed in THE JOURNAL[1] during 1913 and 1914 when these products were being pushed with much vigor by the manufacturers. We know of no evidence that calls for a revision of the statements then made regarding them. The injection of phylacogens is simply the administration of a mixture of the filtered products of several bacterial species. The results which follow represent the reaction of the bacterial protein—a reaction for good or evil. There is no scientific evidence to show that they possess any specific prophylactic virtue. To recommend their use in patients with influenza, as a prophylactic against pneumonia, is unwarranted, and the physician who acts on the advice of the manufacturer must assume the responsibility for the results. In case of mishap he cannot fall back on the manufacturer; he will find no scientific evidence to support him.

ACRIFLAVINE AND PROFLAVINE, N. N. R.

Conclusions to Be Drawn from a Study of the Literature

REPORT OF THE COUNCIL ON PHARMACY AND CHEMISTRY

Acriflavine and proflavine have been accepted for New and Nonofficial Remedies. A description of these drugs, with a discussion of the uses and dosage and tests of identity and purity was published in the New and Nonofficial Remedies Department of THE JOURNAL, Nov. 8, 1919, page 1443. The following report briefly summarizes the literature at present available on these drugs. The abstracts themselves occupy too much space to appear in THE JOURNAL, but will be printed in pamphlet form. This pamphlet will be sent to any physician on receipt of a self-addressed, stamped envelop.

W. A. PUCKNER, Secretary.

It has been known for some time that certain dyes possess bactericidal and amebicidal properties, while others have no effect as antiseptics or germicides. After this discovery was made, chemical research was begun in the effort to produce substances which should have higher bactericidal potencies than those already known. In these studies it was found that certain of the acridine derivatives were especially active as amebicides. Acridine is a substance first obtained from coal-tar. Some of its derivatives have been known and used as dyes for many years, certain of them being known as flavines because of the yellow color they impart to fabrics.

1. The matter published in THE JOURNAL is in pamphlet form, and will be sent to physicians on receipt of a stamped, addressed envelop.

Most of the acridine derivatives have no amebicidal properties; but, as already stated, there are some marked exceptions. One of these (diamino-methyl acridine chloride) was found by Ehrlich to have notable therapeutic effects in trypanosome infections and, on this account, he called it "Trypaflavine." Most of the studies on this substance, both bacteriologic and clinical, have been conducted by English investigators, who call it "Acriflavine." A closely related substance having similar properties is "Proflavine." Acriflavine and proflavine are claimed by some to have high antiseptic power, together with freedom from toxic or irritant action and without inhibiting effects on the phagocytic action of the leukocytes or on the healing processes. Acriflavine and proflavine have been extensively used in the treatment of wounds, and acriflavine has been highly praised in the treatment of gonorrhea.

In view of the interest manifested in the therapeutic properties of acriflavine and related compounds, as evidenced by numerous inquiries from physicians to the Council on Pharmacy and Chemistry, the Council has deemed it worth while to prepare and publish an abstract of the available literature on the subject.[1] Tentative descriptions and standards for acriflavine and proflavine are published in New and Nonofficial Remedies of the information of manufacturers, pharmacists and physicians.

It should be borne in mind that the therapy of these dyes is still in the experimental stage. The evidence at present available does not permit a determination of their value in the treatment of wounds, trench fever, or gonorrhea. A number of papers have been omitted purposely from this abstract of the literature because they presented no additional contribution to the knowledge of the dyes or their therapeutic properties.

SUMMARY

A review of the literature abstracted shows that of the thirty-four reports twenty-five, or 73 per cent., may be considered as favorable. Seven, or 20 per cent., are distinctly unfavorable, and two, or 7 per cent., are in the negative or doubtful class. Of the favorable reports, eight are based for the most part on bacteriologic studies or are of a discursive nature, fourteen are based principally on clinical trials, and three appear to be deduced from a combination of bacteriologic and clinical methods. Of the unfavorable and doubtful reports, five are based on bacteriologic studies and four on clinical trials. Because of the contradictory nature of the reports and the conflicts in the clinical evidence, it would appear that judgment as to the therapeutic value of the flavine dyes should be suspended pending further study.

MEDINAL

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report on Medinal (Schering and Glatz, Inc.).

W. A. PUCKNER, Secretary.

Medinal is a proprietary name applied to barbital sodium (sodium diethylbarbiturate) the sodium salt of barbital (diethylbarbituric acid). The latter was first introduced as Veronal.

Medinal was deleted from New and Nonofficial Remedies in 1916 because the advertising issued by Schering and Glatz (who then acted as agents for Chemische Fabrik auf Actien vorm. E. Schering, the German manufacturer) contained misleading and unwarranted therapeutic claims. The Council did not publish its report because by the time the report was ready for publication the product was practically off the American market, and it was hoped that when Medinal again became available, Schering and Glatz would revise the claims and thus permit its reacceptance.

Medinal, said to be manufactured in the United States, is now marketed by Schering and Glatz, Inc. In October, 1918, the firm sent to the Council a typewritten copy of a proposed circular for Medinal. The firm was informed that this leaflet was subject to the objections that had been raised when Medinal was deleted from New and Nonofficial Remedies. In April, 1919, the firm submitted a printed circular which it was sending out. This contained numerous misleading statements, among them, these:

"MEDINAL removes its [Diethylbarbituric acid] one objectionable feature—insufficient solubility—and thus fulfills the three prerequisites of a truly rational hypnotic: Quick absorption, insuring prompt action, rapid and complete excretion, affording protection from cumulative toxic after effects, and the choice of rectal and subcutaneous administration."

There is no justification for the claim that diethylbarbituric acid (barbital) has only one objectionable feature and that a minor matter of "insufficient solubility." The Council has called the attention of Schering and Glatz, Inc., to the fact that the difference in the time of absorption between Medinal (barbital sodium) and barbital is, at the most, but one of minutes and that there is no evidence that Medinal is excreted more rapidly than barbital. Hence the claims that the danger of toxic side-actions and that cumulative after-effects are avoided in this product, are wholly unwarranted.

It is also claimed, and the claim is unsupported by satisfactory evidence, that Medinal is useful in the insomnia of tuberculosis in which condition it is said to have a double advantage owing to its favorable effects on the night-sweats. It is claimed that Medinal is used in the withdrawal treatment of morphin addiction with great success; there is no evidence that Medinal has any special usefulness in this treatment of the morphin habit. It is claimed further that success has been reported with Medinal in the treatment of whooping cough. The Council knows of no satisfactory evidence to show that Medinal is of special value in whooping cough; on the contrary, it is capable of doing a great deal of harm. The recommendations that Medinal be used for the control of labor pains and in acute neuralgic pains that resist other forms of treatment are wholly unwarranted as the value of the drug in such conditions is inherently improbable and until satisfactory evidence in support of them is forthcoming, must be deemed misleading.

1. The abstract will be sent to any physician on receipt of a self-addressed, stamped envelop.

Correspondence

"DESENSITIZATION OF PERSONS AGAINST IVY POISONING"

To the Editor:—Under the subject, "Desensitization of Persons Against Ivy Poisoning," THE JOURNAL, Nov. 1, 1919, p. 1382, L. E. Warren of Chicago cites a dosage of a non-volatile resin as "0.001 mg." As printed, that spells one one-thousandth milligram or one one-millionth gram—rather a small dosage to juggle with, but perhaps large enough under the circumstances. But what I started to say was, Did he really mean 0.001 mg. or did he mean 1 milligram (0.001 gm)? I have noted this apparent (to me) error in different articles and wondered whether or not I was reading comprehensively. Kindly advise me.

A. L. MANN, M.D., Elgin, Ill.

[The foregoing letter was referred to Mr. Warren, who replies:]

To the Editor:—The statement referred to by Dr. Mann, which is due to Dr. Franz Pfaff, formerly of the Harvard Medical School, is quoted correctly as printed. Several years ago I attempted (*Pharm. J.* **82**:562, 1909) to verify Dr. Pfaff's experiments, using the purified resin from the poison sumach instead of that from the poison ivy (the two poisons are believed to be identical). These attempts to obtain an exact quantitative limit to the amounts which would produce symptoms were discouraging, probably from want of a sufficiently sensitive subject on which to make the tests. The fact was verified, however, that the substance is poisonous in extremely minute quantities—far less than 0.001 gm. The minute dosage is obtained by suitable dilutions in alcohol.

L. E. WARREN, Chicago.

PREPARATION OF DICHLORAMIN-T

To the Editor:—I believe I have found a simpler method for preparing dichloramin-T than that described on the packages put out by the pharmaceutical houses. My method is:

Weigh out amount of powdered dichloramin-T, place in mortar and rub up with small amount of chloroform (carbon tetrachlorid may be used) until all is dissolved, then add chlorcosane to the dissolved dichloramin-T. The chloroform is easily evaporated and thus leaves the dichloramin in solution in the solvent. By this method can be prepared a fresh solution of dichloramin-T in a few minutes, whereas the heat and cold methods take a much longer time. In the heat method, there is danger of overheating, in which a precipitation is caused, which renders the dichloramin-T useless and very irritating.

V. J. Anderson, M.D., Chicago.

[Comment.—We can see no advantage over the heat method, if the chloroform or carbon tetrachlorid must be removed by evaporation. However, the use of carbon tetrachlorid (10 per cent.) has been recommended for lowering the viscosity of the chlorcosane (Dakin and Dunham: Solvents for Dichloramin-T, *Brit. M. J.* **1**:51 [Jan. 12] 1918); therefore Dr. Anderson's note suggests the possibility of first dissolving the dichloramin-T in carbon tetrachlorid, and then adding the proper amount of chlorcosane to make the solution of the desired strength.—Ed.]

"THE CAUSE OF INFLUENZA AND ITS BEARING ON TREATMENT"

To the Editor:—In the current comment with this title (The Journal, Nov. 1, 1919, p. 1367), the work of Bradford, Bashford and Wilson (*Quart. J. Med.* **12**:259 [April] 1919) is mentioned as the most convincing work on the filtrable virus of influenza. Evidently the writer of this comment had failed to see the paper of Arkwright (A Criticism of Certain Recent Claims to Have Discovered and Cultivated the Filter-Passing Virus of Trench Fever and of Influenza, *Brit. M. J.* **2**:233 [Aug. 23] 1919) and the notes appended thereto by Sir John Rose Bradford (p. 236) and Capt. J. A. Wilson (p. 237). In these notes Bradford and Wilson withdraw the claim that their work has proved that the filter-passing organisms of the diseases in question have been grown in pure culture. The action of these authors in publicly withdrawing their claim is as commendable as it is unusual in scientific controversy. In fairness to them it would seem that their retraction should receive publicity at least as prominent as the discredited work for which they no longer vouch.

Ward J. MacNeal, M.D., New York.

"THE RANGE OF THE GENERAL PRACTITIONER IN PSYCHIATRIC DIAGNOSIS"

To the Editor:—I have just read Dr. Southard's article in The Journal, October 25. I like to read and hear psychiatrists and neuropsychiatrists. It reveals stupidity, leads to investigation, and results in humiliation, and then there is hope for regeneration.

But why all this esotericism? Here in this astonishingly "informative" report made, it was discovered, by one of the doctor's own former psychopathic hospital interns, is the phrase, "ideas of a somatopsychic character." I went to my medical dictionary, a good one of recent issue, to find the word "somatopsychic," but it was not there. I consulted the Century and Webster, the very latest editions, with the same disappointment. Now I should like to know just what kind of idea it is that has a "somatopsychic character." Do these people have a little esoteric dictionary that they keep chained to the desk in the inner recesses of some sanctum sanctorum? Again, why this word "disoriented"? Bishop Whately would say confused, and he is not bad authority. This pedantic terminology affected by some writers makes me tired.

If some of these writers would read Professor James a little more and supplement that with a little book not read much in this country, written by an Englishman under the title of "The New Word," we bungling provincial general practitioners might be benefited a little in our ideation and orientation.

O. I. Hess, M.D., Scottdale, Pa.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

EFFICACY OF VACCINES IN PREVENTING INFLUENZA

To the Editor:—Although there is no vaccine recognized as a real prophylactic against influenza, will you kindly say which, in your opinion, is the best one to try, and where it can be obtained? I presume influenza will probably come to this district again, if one can judge by past epidemics. I shall very greatly appreciate your valuable advice on this matter.

J. A. Standring, M.D., El Paso, Texas.
Medical Director, Southern Baptist Sanatorium for the Treatment of Tuberculosis.

Answer.—The efficacy of vaccines in preventing influenza was discussed in an editorial in The Journal, Oct. 4, 1919, p. 1064. It was there pointed out that when the available data on the results attained by prophylactic injections of various combinations of vaccines are carefully analyzed, the conclusion seems unavoidable that their value in the prevention of influenza is unproved. The question may then be raised whether vaccination has any value in preventing respiratory infections either primary or secondary to influenza, or in ameliorating their severity in case they are not prevented. It is understood that there are at present under way in various parts of this country certain investigations which it is hoped will furnish data in answer to this question. One factor in this problem which no doubt will be taken into consideration, but on which there has been thus far but little emphasis laid, is the diversity of the pathogenic organisms which are found in the pneumonias following influenza in different parts of the country. In one region a high percentage of Pfeiffer bacilli is found, and in another a very low one; in other places streptococci predominate and in still others pneumococci, and even in the same community the dominant group of organisms today is often not that of six months ago. It is thus evident that, granting that a vaccine adjusted to one locality should turn out to be effective, it would not necessarily be equally valuable elsewhere. Much has been written, but the number of adequately controlled reports is very small. Thus far hope and imagination have exceeded scientifically controlled facts. Many vaccines come highly recommended by their manufacturers, but very little dependable evidence is submitted to show just how much, if at all, the patient will profit therefrom. If the patient desires to try the experiment knowing it to be such, there is perhaps no serious objection to the trial. Under such circumstances, just which vaccine is "the best one to try" we are not at this time in a position to advise.

ALCOHOL IN PRESCRIPTIONS

To the Editor:—In writing a prescription for alcohol, and placing the patient's name and the purpose for which it is used on the prescription, is the pharmacist compelled to put a little phenol or other poison in it or can he dispense the alcohol pure? Kindly omit name.

J. A. M.

Answer.—Whether denatured alcohol is used in filling a prescription depends on whether the prescription is for internal or external use and on what kind of alcohol the prescription specifies. Alcohol can be prescribed like any other drug. The strength and degree of purity is usually indicated on the prescription. Nonbeverage alcohol, medicated or denatured so as to be unfit for beverage purposes, may be used for filling prescriptions if so indicated. Physicians' prescriptions calling for alcohol must be in duplicate, must be signed by the physician, and must be for a patient under the constant personal supervision of the physician. The prescription must give the name and address of the patient and the condition for which prescribed, and the name of the pharmacist to whom the prescription is to be presented for filling. The physician must keep a record giving a separate page to each patient and must enter it under the patient's name and address, the date of each prescription, the amount and kind of liquors dispensed, and the name of the pharmacist filling the prescription.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

DELAWARE: Dover, Dec. 9-11. Sec., Regular Board, Dr. P. S. Downs, Dover. Sec. Homeopathic Board, Dr. H. W. Howell, 824 Washington St., Wilmington. Pres. Medical Council, Dr. Henry W. Briggs, 1026 Jackson St., Wilmington.

FLORIDA: Jacksonville, Dec. 15-16. Sec., Dr. G. A. Munch, 1306 Franklin St., Tampa.

FLORIDA: Tampa, Dec. 1-2. Sec., Regular Board, Dr. Wm. M. Rowlett, Citizens' Bank Building, Tampa.

ILLINOIS: Chicago, Dec. 1-3. Mr. F. C. Dodds, Supt. of Registration, Springfield.

IOWA: Des Moiness, Dec. 16-18. Sec., Dr. Guilford H. Sumner, Capitol Bldg., Des Moines.

KENTUCKY: Louisville, Dec. 2. Sec., Dr. A. F. McCormack, 532 W. Main St., Louisville.

LOUISIANA: New Orleans, Dec. 1-3. Sec., Regular Board, Dr. E. W. Mahler, 141 Elk Place, New Orleans.

MARYLAND: Baltimore, Dec. 9-12. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown.

OHIO: Columbus, Dec. 2-4. Sec., Dr. H. M. Platter, State House, Columbus.

TEXAS: Galveston, Nov. 18-20. Sec., Dr. M. F. Bettencourt, Mart Texas.

VIRGINIA: Richmond, Dec. 9-12. Sec., Dr. J. W. Preston, 511 McBain Bldg., Roanoke.

Alabama July Examination

Dr. Samuel W. Welch, chairman of the Alabama State Board of Medical Examiners, reports the written examination held at Montgomery, July 8-11, 1919. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 22 candidates examined, 18 passed, and 4 failed. Ten candidates were licensed by reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Birmingham Medical College	(1913) 76.3, (1915)	75.8
University of Alabama	(1919) 85.5,	86.8
Emory University	(1918)	75.2
Chicago College of Medicine and Surgery	(1917)	86.6
Loyola University	(1915)	83.1
Tulane University (1918) 81, (1919) 77.1, 78.3, 86.2.		
Johns Hopkins University	(1919)	86.6
University of Maryland	(1918)	87.7
Jefferson Medical College	(1915)	91.1
University of Pennsylvania	(1906)	83.8
Woman's Medical College of Pennsylvania	(1919)	84.6
Meharry Medical College	(1918)	75.8
Vanderbilt University	(1918)	81.2
FAILED		
University of Arkansas	(1918)	46.8
Memphis Hospital Medical College (1913) 52.1, 64.9, 69.6.		

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Denver and Gross College of Medicine.....	(1905)	Illinois
Atlanta College of Physicians and Surgeons.....	(1903)	Georgia
University of Louisville	(1905)	Kentucky
Tulane University	(1916, 2)	Louisiana
Johns Hopkins University	(1916) Pennsylvania, (1917)	Maryland
Vanderbilt University	(1912), (1917, 2)	Tennessee

Maine July Examination

Dr Frank W. Searle, secretary of the Maine Board of Registration in Medicine, reports the written examination held at Augusta, July 1-2, 1919. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 31 candidates examined, 30 passed and 1 failed. Three candidates were licensed by reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Bowdoin Medical School (1919) 80, 81, 81, 83, 83, 84, 84, 85, 85, 85, 87, 87, 88, 88, 89, 89		
University of Maryland.....	(1917) 80, (1918)	87
Harvard University.....	(1918) 85, (1919) 85, 86. 87, 89, 89	
Tufts College Medical School (1901) 83, (1917) 83, (1918) 87, (1919) 88		
St Louis University	(1918)	83
University of Oregon.....	(1892)	77
FAILED		
Western University	(1912)	72

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
University of Maryland.....	(1904)	New Hamp.
Columbia University	(1905)	Dist. Colum.
Columbus Medical College.....	(1892)	Ohio

Book Notices

THE STUDENT'S TEXTBOOK OF SURGERY. By H. Norman Barnett, F.R.C.S., Major, and Officer Commanding 32d South-Western Mounted Brigade Field Ambulance. Cloth. Price, $7.50. Pp. 794, with 143 illustrations. St. Louis: C. V. Mosby Company, 1919.

It is frequently difficult to give a just appraisal of a book, and there is always danger of doing an injustice to the author by allowing a few minor faults to warp our judgment so that a really meritorious product fails to receive just appreciation. Nevertheless, works that are intended as models for students and as authoritative sources of information for the general profession must maintain a high standard; inaccuracy and dogmatic dismissal of accepted belief cannot be tolerated; and truth must not be sacrificed for the sake of brevity. This book is a British book, and in its failure to appreciate the contributions of American investigators, is a typical expression of the European state of mind. In most sections the work is excellent; in others, we miss much that has seemed of importance. For instance: In the discussion of the treatment of burns, the picric and boric acid methods receive brief attention to the exclusion of all others. In the section of surgical infections, we look in vain for mention of blastomycosis, sporotrichosis and coccidiodal granuloma. Shock is said to be due to exhaustion of the vasomotor center, although physiologists have shown that in experimental shock the vasomotor center is not exhausted. Pancreatitis is described as being always due to infection of the pancreas, this in spite of the fact that at least 50 per cent. of pancreatic abscesses are sterile, and without regard to the work of Flexner, Opie, Archibald and others showing the extreme toxicity of pathologic bile when regurgitated into the pancreas. Cholecystotomy is mentioned as the method of choice in the treatment of the great mass of surgical gallbladders, regardless of the fact that in most of the great American clinics cholecystectomy is the rule. For the man who has sufficient knowledge of surgery to read with discrimination, this book may be of considerable value; for the student, for the man who is just beginning the study of surgery, it were wiser to choose a more catholic guide

DYKE'S AUTOMOBILE AND GASOLINE ENGINE ENCYCLOPEDIA. Containing 532 Charts, Inserts, Dictionary, Index, and Supplements on the Ford, Packard, Airplanes, and Liberty "12" Engine. Treating on the Construction, Operation and Repairing of Automobiles and Gasoline Engines. Also Trucks, Tractors, Airplanes, and Motorcycles. By A. L. Dyke, E.E. Tenth edition. Cloth. Price, $5. Pp. 940, with 3,262 illustrations. St. Louis: A. L. Dyke, 1919.

This book is what its title expresses, and contains excellent diagrammatic plates of the various automobiles, engines, ignition systems, carburetors, etc. Special attention is devoted to the Ford car. For instance, the book states how to rebuild a Ford so that it will go sixty miles an hour—if one has the courage to make that speed in a Ford. It also illustrates the new electric system of this car. A thorough search, however, fails to reveal any methods for making the back seat comfortable or cutting out the rattle. To the physician whose automobile is as essential in his work as is his stethoscope, sphygmomanometer or thermometer, this book will be found useful.

PSYCHIATRIC-NEUROLOGIC EXAMINATION METHODS WITH SPECIAL REFERENCE TO THE SIGNIFICANCE OF SIGNS AND SYMPTOMS. By Dr. August Wimmer, Director St. Hans Hospital, Roskilde, near Copenhagen, Denmark. Authorized Translation by Andrew W. Hoisholt, M.D., Medical Superintendent, Napa State Hospital. Cloth. Price, $2. Pp. 177, with illustrations. St. Louis: C. V. Mosby Company, 1919.

The author presents a systematic method for examining patients with neurologic or psychiatric disturbances. The book is instructive in that it gives numerous suggestions as to what to look for and how to describe what is seen or found. The language of neurology contains numerous trade terms with which the average general practitioner is usually wholly unfamiliar; e. g., "mussitating delirium," "motor-stereotypy," "carphology." Those working in this field must of course familiarize themselves with this terminology. The translation is good, and the book a useful one.

Medicolegal

Power to Exclude Defective Child from Schools

(State ex rel. Beattie v. Board of Education of City of Antigo (Wis.), 172 N. W. R. 153)

The Supreme Court of Wisconsin, in this action of mandamus brought to compel the defendant board of education to reinstate and admit the petitioner's son to the public schools of the city, reverses a judgment that was rendered in favor of the petitioner, and remands the cause with instructions to dismiss the petition. The court says that the boy had been a crippled and defective child since his birth, being afflicted with a form of paralysis which affected his whole physical and nervous make-up. He had not the normal use and control of his voice, hands, feet and body. He was slow and hesitating in speech, and had a peculiarly high, rasping and disturbing tone of voice, accompanied with uncontrollable facial contortions, making it difficult for him to make himself understood. He also had an uncontrollable flow of saliva which drooled from his mouth on his clothing and books, causing him to present an unclean appearance. He had a nervous and excitable nature. It was claimed, on the part of the school board, that his physical condition and ailment produced a depressing and nauseating effect on the teachers and schoolchildren; that by reason of his physical condition he took up an undue portion of the teacher's time and attention, distracted the attention of other pupils, and interfered generally with the discipline and progress of the school. But it appeared that he was normal mentally, and kept pace with the other pupils in the respective grades. A representative of the state department of public instruction suggested that he be placed in the department for the instruction of deaf persons or persons with defective speech, but the boy refused to attend that department.

The right of a child of school age to attend the public schools of Wisconsin cannot be insisted on when its presence therein is harmful to the best interests of the school. This, like other individual rights, must be subordinated to the general welfare. It will be conceded, the court thinks, that the statement of facts presented a fair question as to the effect of the boy's presence on the school and the individual pupils attending it. The question then arose as to what body or tribunal was vested with the authority of determining the question. The trial court seemed to be of the opinion that, while such authority rested with the school board in the first instance, its action in that behalf was reviewable by a jury and subordinate to the jury's opinion thereon. But the supreme court holds that, the board having acted, its determination should not be interfered with by the courts unless it acted illegally or unreasonably. That it acted legally was without question. That it acted unreasonably could not be said. The duty confronting the board was a delicate one. It was charged with the responsibility of saying whether this boy should be denied a constitutional right because the exercise of that right would be harmful to the school and to the pupils attending it. He should not be excluded from the school except for considerations affecting the general welfare. But if his presence in school was detrimental to the best interests of the school, then the members of the board could not, with due regard to their official oaths, refrain from excluding him, even though such action be displeasing and painful to them.

Errors of Judgment—Evidence Requirements

(Paulich v. Nipple (Kan.), 180 Pac. R. 771)

The Supreme Court of Kansas, holding that, there being no evidence to justify a judgment against the defendant, it was error to grant the plaintiff a new trial after a verdict had been rendered in favor of the defendant, reverses the order granting a new trial, and remands the cause with directions to render judgment for the defendant. The court says that the action was to recover damages alleged to have resulted from the malpractice of the defendant in the treatment of a fracture of the femur of the plaintiff's right leg, about three inches above the knee. But, in a city with many able and skilful physicians and surgeons, the only expert called to testify on behalf of the plaintiff was a physician who neither criticized nor condemned the methods employed by the defendant in the treatment of the plaintiff's injury. Non-expert witnesses can testify as to external appearances and manifest conditions observable by any one; but whether a surgical operation has been performed with a reasonable degree of skill, knowledge and care, and whether the patient was thereafter skilfully and properly treated, are questions of science, to be established by the testimony of witnesses of special skill and experience, and not by the testimony of those who are without special learning and skill as to such operations and practice. The burden rested on the plaintiff to show affirmatively that the conditions he complained of were caused by the failure of the defendant to exercise ordinary skill and care in performing the operation of reducing the fracture, or in the subsequent course of treatment for the injury. In a very early case, this court recognized the doctrine that a physician or surgeon is not held to the exercise of the highest degree of skill, or as warranting a cure or the success of an operation.

A physician or surgeon cannot be held liable for the results of an honest error in judgment, if it is shown that he possesses a reasonable degree of skill and learning in medicine and surgery, and that he used ordinary skill and care in the diagnosis, operation and treatment of the plaintiff. It is true that the physician is bound to possess and exercise that degree of skill which is ordinarily possessed by physicians in practice; but when his errors are those only of judgment, if he keeps within recognized and approved methods, he will not be liable for their consequences.

It has never been the rule that a lawyer who is not shown to be unskilled in his profession is liable because a client sustains damages by following his advice, honestly given, but which is subsequently determined by a final decision of a court to be erroneous. A physician stands in the same attitude as to liability for his mistakes as does a lawyer. No reason can be assigned for making a distinction between them, or for holding a physician or surgeon liable in damages for an honest error in judgment. A moment's reflection on the circumstances and emergencies under which physicians are frequently called on to act will demonstrate some of the disastrous results that would follow if the law permitted them to be mulcted in damages on testimony as to the character of their professional services given by nonexpert witnesses. If such were the law, physicians and surgeons might as well be held to guarantee a successful cure or a successful operation in each instance. Negligence of a physician or surgeon cannot be presumed from the mere failure to obtain the best results from an operation or treatment; and in this case, there being no proof of a want of skill or care on the part of the defendant it was error to set aside a verdict rendered in his favor and grant the plaintiff a new trial.

Statements Made to Physician Long After Accident

(Boulanger v. McQuestin & Lewis (N. H.), 106 Atl. R. 492)

The Supreme Court of New Hampshire overrules an exception to the exclusion, in a personal injury case, of a question asked a physician as to what history the plaintiff gave him when he consulted him for treatment more than a year after he was injured. The court says that the history given the physician by the plaintiff over a year after the accident was not admissible as evidence of the accident or in corroboration of the plaintiff's statements at the trial. This was too plain for discussion, and the only ground on which the admissibility of the question was being urged was that the physician's information as to the cause of the injury was competent as explaining and giving weight to his conclusions. If the purpose of the inquiry was under the pretext of offering evidence of the foundation of the physician's opinion to violate the general rule excluding prior statements of the party, the evidence was properly excluded. Whether, if the ground of admission claimed was presented to the trial court, the evidence should be excluded because of lack of good faith in offering it, was necessarily for the trial court, as depending on the determination of a question of fact.

Society Proceedings

COMING MEETINGS

Medical Society of Hawaii, Honolulu, Nov. 29-30, Dec. 1.
Society of American Bacteriologists, Boston, Mass., Dec. 30-31.
Southern Minnesota Medical Assn., Mankato, Dec. 1-2.
Southern Surgical Association, New Orleans, Dec. 16-18.
Western Surgical Association, Kansas City, Dec. 5-6.

AMERICAN PUBLIC HEALTH ASSOCIATION

Forty-Seventh Annual Meeting, Held in New Orleans, Oct. 27-30, 1919

The president, DR. LEE K. FRANKEL, New York, in the Chair

Spread of Typhoid in Massachusetts

DR. GEORGE T. O'DONNELL, Boston: The experience of the Massachusetts State Department of Health shows that flies, food (exclusive of milk), privies and sewage are relatively small factors in the spread of typhoid fever at the present time in the state. Very few cases are due to water, especially in recent years, and in general no municipal supply is considered as a dangerous source of typhoid infection. Milk as a means of spreading typhoid infection was responsible for 8.1 per cent. of the total cases reported in Massachusetts the past ten years. Contact with clinical cases of typhoid is the most frequent known method of the spread of the infection. Contact with noncarriers has been responsible for a few cases in homes and neighborhoods. Carriers were proved to be responsible for 41.6 per cent. of cases of milk-borne typhoid from 1915 to 1918, inclusive. Carriers are a larger factor in the spread of typhoid than at present known, and are the cause probably of an appreciable number of typhoid cases of unknown origin.

DISCUSSION

DR. HERMAN BUNDESEN, Chicago: No case of typhoid should be terminated until we have had two negative feces and two negative urine examinations in the case of persons who are not handlers of food. We require more than two negative examinations in food handlers. In Chicago we had eighty-seven cases of typhoid traceable to one carrier.

DR. H. W. HILL, Minneapolis: I should like to ask Dr. O'Donnell whether he attaches any importance to flies as carriers of typhoid infection; also, whether in Massachusetts they have compulsory hospitalization of typhoid patients.

DR. JOHN DILL ROBERTSON, Chicago: We believe in the strict enforcement of the pasteurization ordinance. Our death rate from typhoid is less than 1 per cent. In 1918 it was 1.4 per cent. We hospitalize every case in which proper care cannot be given the patient at home. No nurse is allowed to have anything to do with any other case while attending a typhoid patient; hence we have very few cross infections on that account.

DR. GEORGE T. O'DONNELL, Boston: We have failed to find an instance in which we could prove that secondary infection was due to flies. Hospitalization of typhoid cases is practiced throughout Massachusetts. As to the pasteurization of milk, of more than 8,000,000 quarts of milk, we know positively that more than one third of that amount was pasteurized. Over 90 per cent. of the people in Massachusetts have a pure water supply.

Leprosy

MR. JOHN A. VOGELSON, Philadelphia, introduced the following resolution which was unanimously adopted:

Resolved, That the health officers of this section of the American Public Health Association tender to the United States Public Health Service their hearty support and cooperation in carrying out the provisions of the act of Congress providing for the care and treatment of persons afflicted with leprosy, and to prevent the spread of this disease in the United States, and urge that such a provision be carried into effect at as early a date as practicable.

DISCUSSION

DR. ARCHIBALD HOYNE, Chicago: Cases of leprosy should be hospitalized the same as cases of tuberculosis. We have had a few lepers in Chicago in the last few years. Chaulmoogra oil, given once or twice a week, intramuscularly, in increasing doses, has been followed by remarkable improvement.

DR. H. R. CARTER, Baltimore: There is good reason to believe that leprosy is rarely or never communicated to elderly persons. In taking care of lepers I would suggest that elderly nurses be employed, as the risk of such people contracting the disease is absolutely nil.

Report of Committee on Venereal Diseases

DR. W. F. SNOW, Washington, D. C.: We cannot do anything in a legislative way unless we have the support of the public. The outstanding points in civil life are the untreated cases of venereal diseases, on which we should concentrate our attention, and on those persons who never seek treatment. They do not know they are infected. Others, almost equally important as spreaders of the disease, are the missed patients who present themselves for treatment. Next come the uncured patients, who must be followed up. Failure to make a diagnosis and institute treatment in suspected cases and carriers is one of the great sources of the spread of these diseases.

Administrative Measures Against Influenza

DR. ALLEN W. FREEMAN, Columbus, Ohio: The hypotheses on which we have operated up to this time are that (1) influenza is caused by a specific living virus; (2) the portals of entry of this virus are the nose and the mouth; (3) this virus is contained in the secretions from the nose, mouth and respiratory tract, and (4) the virus is communicated by transference of spittle and nasal secretion through direct or indirect contact, and by droplet infection from coughing and sneezing. No convincing experimental evidence has been advanced in support of any of these hypotheses. On this basis, however, various preventive measures have been proposed, of which the most important are: (1) isolation of patients; (2) prohibition of public gatherings; (3) masking of the general population; (4) general vaccination with antistreptococcic or mixed vaccines, and (5) general educational propaganda. The practically unanimous verdict of laboratory workers, however, is to the effect that the true virus of influenza has not yet been isolated and that such a vaccine cannot yet be prepared. Until additional evidence is produced regarding existing vaccines or until a truly specific vaccine is developed, general vaccination cannot be considered a sound administrative procedure. Our energies, therefore, must be directed rather to the prevention of fatal complications than to the prevention of influenza itself. For this purpose, adequate medical and nursing service and properly equipped hospitals should be organized and made available for instant use. In these hospitals and in the home care of patients, every effort must be made to prevent secondary and cross infection.

American Red Cross Health Crusade Against Influenza in Cincinnati

DR. WILLIAM H. PETERS, Cincinnati: Early in February, all of the institutions caring for dependent persons were crowded. Medical care, nursing service and material relief for those whose health and income had been shattered was given through the American Red Cross health crusade organized by the Cincinnati chapter influenza committee, cooperating with the board of health and the existing socal agencies of the city. During the first four months of operation, 13,772 influenza subjects were listed, and 5,624 were found to be in need of some kind of medical, surgical or dental aid. Particularly well done was the follow-up of tuberculosis cases, which approached as nearly as is possible 100 per cent. Nearly 50 per cent. of the children under 5 who had influenza gave a positive von Pirquet reaction.

What Medical Examination of Influenza Patients Has Shown in Framingham, Mass.

DR. D. B. ARMSTRONG, Framingham, Mass.: Previous to the influenza epidemic, about 12,000 people in Framingham, out of a population of 17,000, had had a medical examination; hence the follow-up system after the influenza epidemic was considerably facilitated. Does influenza increase the tuberculosis incidence? It does not appear that there

has been thus far reported an increased tuberculosis incidence following the influenza epidemic, so far as our experience is concerned. Has the epidemic increased the tuberculosis mortality? Judging by the evidence as regards the incidence of the disease, we are forced to the tentative conclusion that there will probably not be an increase in tuberculosis mortality. What does influenza do to the arrested tuberculosis case? In Framingham, 4 per cent. of tuberculosis patients had influenza. The disease stimulates a certain amount of activity, but in most of these arrested cases which have been in some degree lighted up by the influenzal infection, a very satisfactory rearrest of the disease takes place, and most of these patients are back at work and are living fairly normal lives again. It has been said that influenza attacks husky persons rather than weaker ones. This raises a question which has a bearing on a general health educational problem, namely, Is it really a hazard to be healthy? May it not be that the shoe is on the other foot: that it is not so much a hazard to be healthy as it is an advantage to be weak? People who had tuberculosis had very little influenza. In our community the Irish and Irish-Americans had ten times as much tuberculosis as the Italians, and had only one fourth as much influenza.

DISCUSSION

Dr. Hamilton P. Jones, New Orleans: In my experience at Fort Bliss, Texas, during the recent influenza outbreak, all true cases of influenza were clinically cases of bronchopneumonia. Routine cultures were made from the nasopharynx for pneumococci, hemolytic streptococci, *Streptococcus viridans*, and later, for a new streptococcus which we called a methemoglobin producing streptococcus. We found that certain organisms apparently had a higher percentage of carriers than others; that there was a definite relation between the number of carriers in a given regiment and the number of cases of pneumonia entering the hospital—the higher the number of carriers the greater the number of cases of pneumonia and the greater the number of deaths. We succeeded in having a general order issued for the bacteriologic examination of all the men. They were given some form of nasal treatment—2 per cent. solution of dichloramin-T in liquid petrolatum as a nasal spray, and the tonsils were painted with a 10 per cent. aqueous solution of copper sulphate. In February, eighty-two cases of bronchopneumonia were admitted to the hospital. In March, nine; in April, none. No vaccines were used in this locality, except in one organization and with apparently no protective effect.

Dr. Frederick Guest, London, Ont.: In an overseas hospital in which many cases of influenza were treated, we adopted the plan of opening the windows at the top and bottom and establishing free ventilation, and to this measure we attribute our success in treatment and the low death rate.

Dr. H. L. Rockwood, Cleveland: There is no better way of increasing the immunity of individuals than to raise the resistance of the mucous membranes of the respiratory passages, and no measure will do this better than ventilation.

Mr. Louis I. Dublin, New York: The mortality from tuberculosis of all forms was slightly lower in the first nine months of 1918 than in the first nine months of 1917. In the remaining three months of 1917 the mortality increased 16 per cent. from tuberculosis, as against an increase of 5 per cent. in 1918. The patients with advanced tuberculosis who were attacked by influenza died quickly. In 1918, from the close of the epidemic in the early spring of the year, there was a marked decrease in the mortality from tuberculosis as compared with the preceding five years. The conclusion is that if influenza had an effect on tuberculosis, it had it immediately.

Dr. Charles A. Hastings, Toronto, Ont.: Disinfecting the throat and nose is not an absolutely safe procedure. A preparation that is strong enough to be of any value in that connection irritates the mucous membranes and thus lowers the natural resistance of the individual and makes him more susceptible to the disease. One reason why husky individuals are more frequently attacked with influenza than frail persons is that the latter go to bed, they rest, they take good care of themselves, while the robust individuals stay up late at night, and if they feel a little indisposed they will not go to bed and take proper care of themselves as they should; hence they lower their resisting powers and become a prey to influenza and its complications.

Dr. John Dill Robertson, Chicago: Every health officer should utilize to the fullest extent the medical and lay press for public health education. In Chicago we have established a training school for home nursing to meet the needs of the people when an epidemic of influenza is prevailing.

(To be continued)

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA

Sixty-Ninth Annual Meeting, held in Harrisburg, Sept. 22-25, 1919

(Continued from page 1468)

Diagnosis of Cholecystitis and Gallstone

Dr. David Riesman, Philadelphia: There are few conditions in the body that create such confusing pictures as disease of the gallbladder. Gallstone disease appears in two principal forms: (*a*) in the form of recurrent attacks with intervals of fairly good health, and (*b*) in the form of ill-defined gastro-intestinal symptoms that may point to gallstone, gastric ulcer, duodenal ulcer, appendicitis and other conditions. As a normal gallbladder can never be felt, a palpable gallbladder is *ipso facto* proof of disease. There are several points of value: A history of acute indigestion or of ptomain poisoning should arouse suspicion. Acute indigestion, so often given as the cause of death or as the cause of very sharp abdominal pain, is generally a misnomer. If it comes on without any warning in an adult in middle life, it is usually either angina pectoris or biliary colic. The presence of gallstones in the feces is not common, but I think if we had our patients look for stones systematically after all sudden attacks of pain in the upper abdomen, they would be found more frequently.

DISCUSSION

Dr. J. J. Gilbride, Philadelphia: No part of the body is more neglected than that involved in disease of the gallbladder. Therefore, in these cases one should not wait to find all the symptoms, for in such cases the disease dates back many years. In chronic disease the common symptoms are indigestion, distress and periodic pain. A stone in the gallbladder may not produce any symptoms whatever, except indigestion and pain. If there is an infection, there will be jaundice. In stone in the common duct there is practically always jaundice. Sometimes there is nothing but a history of pain. In the absence of jaundice, a clear history of pain is the most valuable symptom. It may be referred to the right shoulder, to the left shoulder, or to the left side. Occasionally the pain may be referred to the umbilical region. I have seen cases of gallstones in which pressure over the gallbladder did not produce any tenderness whatever.

Value of Roentgenologic Study of Gastro-Intestinal Tract

Dr. Henry K. Pancoast, Philadelphia: The roentgen-ray examination of the gastro-intestinal tract is in no way to be regarded as a substitute for a careful and thorough clinical study of a case. It has a well recognized and established place as a method of examination to assist in reaching correct conclusions, just as has the clinical study, and it has well defined limitations with which every one should be conversant. An examination of the gastro-intestinal tract is in a large measure, aside from the observation of filling defects, a physiologic study by an unusual means of watching the mechanism of the progress of an opaque meal for the purpose of detecting interference with normal physiologic action. It therefore requires time and patience on the part of both patient and examiner. A complete study cannot be accomplished in less than three days. The making of three or four roentgenograms without a proper roentgenoscopic study is not the correct or accurate way of making a gastro-intestinal study. Such examinations are usually a waste of

time and also a poor investment, and the conclusions, being without foundation, may be misleading and even dangerous. More men are specializing in roentgenology now than ever before. The new man has usually completed a thorough course of training, but he must continue to read, study, attend meetings and visit others and see their work, because advances in roentgenology are so rapid that one soon falls behind, and the hermit roentgenologist rapidly becomes a useless member. Roentgenology is not a field for fanciful diagnoses unless one is very certain of his premises.

DISCUSSION

DR. JOHN H. GIBBON, Philadelphia: The advancement in the diagnosis of gastro-intestinal lesions has been greatly due to what the roentgenologists have done, but we must avoid the danger of operating on the interpretation of an inexperienced roentgenologist or on the apparent lesion shown in the roentgenograms.

Surgical Treatment of Lesions of the Gastro-Intestinal Tract

DR. ALFRED C. WOOD, Philadelphia: The perforated ulcer is always a surgical condition. Each hour of delay lessens the chance of recovery. On the other hand, chronic ulcers, including those accompanied by hemorrhage, should be treated medically, at least for a time. After medical measures have been given a fair trial without permanent relief, it would be proper to have the surgeon join the physician in the case. After operation for ulcer, the patient should be returned to the internist for a prolonged course of observation, and such dieting and other treatment as may be necessary to promote rapid and complete healing of the ulcer, as well as to restore the normal gastric functions. Patients with carcinoma of the stomach come to the surgeon when only a palliative operation can be done, and in many instances even this is not possible. If a larger measure of benefit is to be offered these patients, operation must be done much earlier in the future than it has been in the past. Every case of carcinoma of the gastro-intestinal tract is a surgical problem from the beginning, yet almost every one of these patients has been under medical observation and treatment for a more or less prolonged period if not throughout its whole course. Pancreatitis is frequently, if not in most instances, the result of infections of the bile tract; the only means known at present to prevent pancreatitis is to deal promptly and radically with cholecystitis and cholangeitis. The most important factor in its treatment is efficient biliary drainage.

DISCUSSION

DR. HAROLD L. FOSS, Danville: Errors in diagnosis are due to carelessness rather than to lack of knowledge as to how the diagnosis should be made. A number of years ago I investigated the errors in the diagnosis of abdominal conditions in one of the largest clinics in this country and found that the gross errors as proved at the operating table were about 10 per cent. That is in a clinic where every possible means is exercised in determining the correct diagnosis before the patient is sent to the hospital. There are experts in every particular branch, so the patient receives the benefit of these examinations; and yet in that great clinic they are making about 10 per cent. gross errors in abdominal disease; 65 per cent. had to do with the duodenum, gallbladder and appendix. Roentgenology does not help us in any part of the body to such an extent as it does in early carcinoma of the pylorus.

DR. LAWRENCE LITCHFIELD, Pittsburgh: I have observed a case in which root pains from a growing tumor pressing on the spinal cord had caused several abdominal operations. How many surgeons test the patient who is suffering from acute or chronic abdominal pains for ankle clonus or disturbance of sensations in the lower extremities? How many surgeons have operated on the abdomen in the presence of ankle clonus? Another question for the internist: Patients come with glycosuria, the condition is diagnosed as diabetes, and treatment is begun, when a careful search into the history may give vague symptoms of gallbladder disease which may lead to the diagnosis of pancreatitis, and drainage of the gallbladder may clear up the glycosuria. The case may not have been one of true diabetes at all. Many cases of perforative peritonitis do not present the traditional picture as to gravity. The history may strongly suggest perforation, but the physical examination does not seem quite to warrant entering the abdomen. I have seen two deaths in which surgeons had refused to open the abdomen because the patient did not seem ill enough. In cases of suspected malignancy, abdominal section will do no harm and may be an eye opener as well as an abdomen opener.

DR. JOHN A. LICHTY, Pittsburgh: Dr. Pancoast struck the keynote in roentgen-ray work, that is, it has to be coordinated with conditions in general. The roentgenologist who establishes a diagnosis will have to be a pathologist and a clinician. An operation for cholecystitis should not be done without making a Wassermann test to determine whether or not syphilis is present. A colleague opened the abdomen for chronic appendicitis and found a gumma on the ileum.

DR. THOMAS MCCRAE, Philadelphia: Mistake in operation is often made on account of careless examination. It is often contributed to by bad palpation. The physician often starts in with what I call the finger-poking method and palpates the abdomen with the tips of the fingers. The first point in abdominal palpation is to use the flat of the hand and palpate gently. A disease responsible for a certain number of wrong diagnoses is prostatitis. Many abdomens have been entered for this with referred pains. Many of the statistics as to gastric ulcer cured by operation are based on observations that do not extend sufficiently long. As regards carcinoma of the stomach, I have seen many cases in which operation was out of the question, except to relieve pyloric stenosis. I feel very doubtful of making a tremendous advance because we do not get the patients early enough. A campaign of education may help in ten, fifteen or twenty years.

DR. ALFRED C. WOOD, Philadelphia: I have one clear recollection of a carcinoma studied in the medical ward because the signs were obscure. The physician said: "He has symptoms that might point to ulcer or carcinoma; his hemoglobin is 60 per cent., his red cells, 3,000,000. He is a little sallow, but we will treat him for ulcer, and, if he improves, we will know that he has ulcer." He was treated *secundum artem* and improved. The red cells increased to 4,500,000. He gained in weight, and the diagnosis was "ulcer." He was sent home. In a short time he came back to the hospital. He was much worse. He was then subjected to operation, when an inoperable carcinoma of the stomach was found. A patient with carcinoma can be built up in regard to blood, weight and so on.

Epidemic Cerebrospinal Meningitis: Diagnosis and Treatment

DR. JOSEPH SAILER, Philadelphia: The two features of importance in the management of meningitis are prophylaxis and serum treatment. Prophylaxis at the present day can be accomplished by the recognition, segregation and treatment of carriers. Chronic carriers may require segregation for a long time, and there is no known certain method of clearing them. Treatment of the disease by serum is specific, and the most important method of administration is intrathecal. The intravenous administration may also be employed, particularly in cases in which there is found general blood infection, or evidence of purpuric eruption or of localization in some of the internal organs. The amount of serum should be the most that can safely be administered, and it should be given from one to three times a day in the early stages and at the earliest possible moment in the case. We are still in doubt regarding the efficacy of vaccines. Other methods of treatment are either useless or of such minor importance that they do not demand consideration. Great care should be taken not to administer serum during serum fever. The latter may be mistaken for a recrudescence.

DISCUSSION

DR. LAWRENCE LITCHFIELD, Pittsburgh: I gave Flexner's serum intravenously as well as intraspinally in all my meningitis cases. It seemed to me that the patients did better;

two men with pneumonia recovered. In my meningitis patients who refused water and to whom we could not give a sufficient amount by the bowel I found that the very free use of glucose intravenously was very often decidedly beneficial, and in many cases apparently life saving.

Dr. M. Howard Fussell, Philadelphia: When Flexner first advised the treatment of meningitis with serum, it seems to me our results were better than they are at the present time, and I would ask whether Dr. Sailer has noted any difference in the serums made by different manufacturers.

Dr. B. Franklin Royer, Philadelphia: Much depends on when the serum is used in the epidemic as well as in the disease itself. Certainly, our results were better when treatment was given as early as the second day.

Dr. Thomas Klein, Philadelphia: In 1916 I treated a number of cases of cerebrospinal meningitis in Dr. Sailer's service, giving the antimeningococcic serum intravenously. In a series of seventy-seven cases the mortality was 18 per cent. Then and at Camp Dix we thought the intravenous administration obviated the necessity of the large dose in the spinal canal, and in that respect I think the intravenous method has the advantage over the intraspinal method alone. Our mortality in cases not treated by the serum was about 40 per cent. The intravenous administration was begun as early as possible, with 50 c.c. of diluted serum, repeated every eight or sixteen hours as demanded.

Dr. Joseph Sailer, Philadelphia: I believe the indication is that in all cases of meningitis, isolation of the most careful character should be practiced. That ward infection is rare is no reason why every possible precaution should not be taken.

(To be continued)

MINNESOTA STATE MEDICAL ASSOCIATION

Fifty-First Annual Meeting, held in Minneapolis, Oct. 1-3, 1919

(Concluded from p. 1465)

A New Operation for Pyothorax: The Trephine Operation

Dr. A. C. Strachauer, Minneapolis: This operation consists of trephining a rib. It affords an air-tight joint for the application of the continuous, even, negative pressure suction pump with provision for irrigation with surgical solution of chlorinated soda. The operation may, and usually has been, performed under local anesthesia. Mutilation deformity, and spur formation with fixation of the adjoining ribs, is avoided. All discharges are collected in the receiving bottle, obviating the necessity of repeated dressings. The suction prevents the accumulation and retention of pus in the pleural sac, and the absorption of the contained toxins. The likelihood of introducing secondary infections is less than in open drainage.

Rational Treatment of Carcinoma of the Uterus

Dr. J. Warren Little, Minneapolis: In carcinoma of the body of the uterus, a panhysterectomy should be done followed by prophylactic radiation. In cervical carcinoma in the operable stage, either a panhysterectomy followed by radiation is indicated or a thorough radiation without operation. As good or better results can be obtained from radiation alone, with practically no danger or pain to the patient, radium penetrating beyond the point at which the knife can be used. In inoperable cases, radium is much superior to any other treatment. Large fungating masses producing toxemia should be removed with the cautery followed by radium. I have abandoned the Percy cautery for radium. I do not advocate the Wertheim operation because of its high primary mortality, its serious sequels, and because there are too few cures for the difficulties and dangers encountered.

Paralysis of Abducens Nerve Secondary to Mastoiditis

Dr. George C. Dittman, St. Paul: I have had two cases. Both patients recovered, one after mastoidectomy and the other with conservative treatment and the injection of 2 minims of phenol (carbolic acid) neutralized with gum camphor, into the middle ear every other day. No doubt the condition is due to an anomaly of the sixth nerve in its relation to the petrous portion of the temporal bone. I believe that the infection spreads by way of the tympanic cavity and not through a mastoid route. Mastoid operation or early and free drainage of the middle ear is indicated in all cases.

Sustaining Value of Repeated Blood Transfusions in Pernicious Anemia

Dr. Frederick H. K. Schaaf, Minneapolis: A patient who had pernicious anemia was transfused fifty-four times, receiving a total of 34,235 c.c. of blood. Forty-nine transfusions were necessary to produce the second remission, which was of five months' duration. The sodium citrate method is the method of choice, especially since the percentage of reactions has been reduced and their harmlessness has been proved. It is the procedure of choice in hemophilia, purpura and melena neonatorum. Blood transfusion is far superior to the injection of salt solution, when more than merely a momentary effect is desired. It will often save a case of acute or chronic bleeding, and permit surgical intervention otherwise impossible. In cases of severe streptococcic infections, transfusion is of no value, but in low grade subacute infections, and in toxemias, it will increase the patient's resistance and help toward recovery. In pernicious anemia in a majority of cases, it will produce immediate general improvement and facilitate feeding by increasing the appetite and causing the disappearance of nausea and other annoying symptoms when other therapeutic measures would require weeks to produce the same effects. In many cases of pernicious anemia, transfusion may cause a remission, but whether by direct stimulation of the bone marrow or indirectly by improving the general condition and circulation has not been decided. Transfusion may have to be repeated again and again to keep the patient alive until another remission occurs. In pernicious anemia the transfusion of blood has a decidedly beneficial influence, but has no curative value whatsoever.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Ophthalmology, Chicago

October, 1919, **2**, No. 10

Tuberculosis of Retina. E. Jackson and W. C. Finnoff, Denver.—p. 715.

Treatment of Dacryocystitis by Curettage (Thompson): Supplemented by Immediate Rapid Dilatation of acrimonasal Duct. J. Green, Jr., St. Louis.—p. 723.

Recurrent Spontaneous Retinal Hemorrhage of Probable Tubercular Origin. R. H. Buck, Chicago.—p. 731.

New Operation for Relief of Conical Cornea. L. W. Fox, Philadelphia.—p. 738.

Experiments on Rabbits with Arsphenamin. J. A. Johnson, Tacoma, Wash.—p. 741.

Spontaneous Rupture of Morgagnian Cataract. J. de J. Gonzalez, Leon, Gto., Mexico.—p. 743.

Case of Traumatic Pulsating Exophthalmos. R. S. Magee, Topeka, Kan.—p. 744.

Archives of Neurology and Psychiatry, Chicago

Nov. 1, 1919, **2**, No. 5

Some Neurologic Aspects of Reconstruction. H. Cushing, Boston.—p. 493.

*Cutaneous Sensibility in Cases of Peripheral Nerve Injury: Epicritic and Protopathic Hypothesis of Head Untenable. S. Cobb, Boston.—p. 505.

Supplementary Muscle Movements in Peripheral Nerve Lesions. L. J. Pollock, Chicago.—p. 518.

Misleading Motor Symptoms in Diagnosis of Nerve Wounds. A. H. Woods, Philadelphia.—p. 532.

*Eye Symptoms in Pseudotumor Cerebri; Report of an Additional Observation. A. Lutz, Havana, Cuba.—p. 539.

Hysteria in Light of Experience of War. A. F. Hurst, London, Eng.—p. 562.

Cutaneous Sensibility in Pheripheral Nerve Injury.—A review of the experimental and clinical work on cutaneous sensibility Cobb claims indicates that the epicritic and protopathic hypothesis of Head and his collaborators should be abandoned. Dissociations of sensation due to peripheral nerve lesions arise from comparing stimuli not only quali-

tatively different but quantitatively unequivalent. In short, they are artefacts. Clinical examinations should be simple, and since areas of dissociated sensation in peripheral nerve lesions are shown to be due to artefact, examination for one mode of sensation suffices for diagnosis. For clinical sensory examinations quantitatively standardized stimuli should be used. Subcutaneous pressure is best tested with an instrument which gives the threshold values in grams. Hyperalgesia may follow the course of superficial veins.

Eye Symptoms in Pseudotumor Cerebri.—Lutz records the case of a woman in the prime of life who fell suddenly ill, without any increase of temperature or signs of infectious meningitis, presenting all the symptoms of brain tumor: choked disk, headache, vertigo and vomiting. These symptoms, after having appeared most alarming for fourteen days, slowly recede, the choked disk included, so that four weeks later the patient feels normal. In the subsequent two years a unilateral deafness develops, followed one year later by the unilateral loss of the vestibular function, and from time to time attacks occur which tend to show an alteration in the left cerebellopontile angle. The patient shows no indications of the unilateral Romberg sign, which can be explained by unilateral lesion of the homolateral tractus spinocerebellaris. Pseudotumor can be diagnosed with certainty only by necropsy. Lutz says that he does not in this case make the diagnosis of benign tumor of the cerebellopontile angle, but he inclines to that of pseudotumor, for the following reasons: sudden onset of the disease; retrocession of all the symptoms within a short time, especially of the choked disk; negative reactions of the cerebrospinal fluid and increase of its quantity; the fact that the unilateral deafness did not appear as a first symptom; the lack of a constant progressive paralysis of the other cranial nerves; the increase of the patient's weight, and, finally, the time that has elapsed since the first attack.

Boston Medical and Surgical Journal

Oct. 30, 1919, **181**, No. 18

Use of Obstetric Forceps. C. J. Kickham, Boston.—p. 534.
Epidemiology of Influenza. D. M. Lewis, New Haven, Conn.—p. 540.

Florida Medical Association Journal, St. Augustine and Jacksonville

October, 1919, **6**, No. 4

Wassermann Test as Control in Treatment of Syphilis. G. E. Henson, Jacksonville.—p. 76.

Journal of Infectious Diseases, Chicago

November, 1919, **25**, No. 5

*Bacteriologic Analysis of Fecal Flora of Children. Changes Produced by Carbohydrate Diet. G. B. Morris, R. L. Porter and K. F. Meyer, San Franciso.—p. 349.
*Studies in Epidemic Encephalitis (Encephalitis Lethargica). L. Loewe, S. Hirshfeld and I. Strauss, New York.—p. 378.
*Rôle of Pfeiffer Bacillus in Recent Epidemic of Influenza. C. W. Duval and W. H. Harris, New Orleans.—p. 384.
*Influenza Epidemic at Camp Grant. E. F. Hirsch and M. McKinney, Camp Grant, Ill.—p. 394.
Antigen of Bacillus Anthracis. C. C. Warden and J. T. Connell, Ann Arbor.—p. 399.
Production of Antiserum for Agglutination Tests. F. H. K. Reynolds and J. F. Hill, Ft. McPherson, Ga.—p. 412.
*Serum Reactions in Influenza. F. P. Gay and D. H. Harris, New Haven, Conn.—p. 414.
*Transmission of Influenza. H. R. Wahl, G. B. White and H. W. Lyall, New Haven, Conn.—p. 419.
Influence of Desiccation on Certain Normal Immune Bodies. H. T. Karsner and K. R. Collins, Cleveland.—p. 427.

Fecal Flora of Children.—This article contains the description and interpretation of a bacteriologic method applicable to the examination of fecal specimens of children apparently suffering from "intestinal intoxication." It is furthermore shown that a strongly putrefactive flora is associated with certain groups of intestinal disorders of infancy, and that clinical improvement is practically always accomplished by a strict carbohydrate diet. The progress in the transformation of the intestinal flora is readily controlled by the cultural tests described.

Virus of Epidemic Encephalitis.—A filtrable virus was obtained by Loewe and his associates from the nasopharyngeal mucous membrane in fatal cases of epidemic encephalitis. The virus is capable of producing in monkeys and rabbits lesions similar to those found in the human brain. The virus has been carried through four generations in rabbits, transmitted to a monkey in the fifth generation, and then brought back to rabbits. The virus can be recovered from the nasopharynx of animals inoculated intracranially. A natural immunity was found in approximately 50 per cent. of the rabbits. An acquired immunity was demonstrated in one monkey. A possible connection of this disease with influenza was hinted at in a previous report and studies are now being undertaken to establish such relationship.

Pfeiffer Bacillus in Influenza Epidemic.—It is maintained by Duval and Harris that the micro-organism known as the bacillus of Pfeiffer may be isolated from the material of the respiratory tract lesion in all cases of epidemic influenza, and recovered only occasionally from persons not infected. There is inadequate proof that the Pfeiffer bacillus is a member of the normal upper respiratory tract flora. That it may occur in normal individuals during epidemic times or persist for months in those who have recovered from the infection, is well recognized. These persons are the interim carriers of the bacillus and constitute an important means for transmission of the infectious agent. During the course of the infection and for a variable time after recovery, the blood contains specific immune bodies for *B. influenzae* while those not infected are without these substances. The subcutaneous inoculation of persons with influenza protein causes the production of specific immune bodies. The reaction occasioned in the inoculated person is definite evidence of its toxic property. Secondary infections with one or more of the ordinary respiratory tract flora is common in epidemic influenza and is usually responsible for the occurrence of pneumonia. The Pfeiffer bacillus is the primary cause of epidemic influenza for the reason that sufficient postulates in the recognition of its etiology can be fulfilled.

Influenza Epidemic at Camp Grant.—With the decline of the influenza epidemic at Camp Grant, the changes noted at postmortem examinations were chiefly such as occur with a healing or complicated pneumonia. The postepidemic pneumonias differed from the epidemic in that changes commonly recognized as due to a hemolytic streptococcus were frequent. Occasionally, the epidemic type of pneumonia was noted within three months after the epidemic, but more recently the classical gray lobar variety was observed. The postmortem bacteriologic studies demonstrated a high incidence of hemolytic streptococcus infections, less frequently pneumococcus. The virulence of pneumococci recovered from diseased lungs since the epidemic is less in rabbits and guinea-pigs than the epidemic strains. Hemolytic streptococci recovered during and since the epidemic, according to Holman's classification, belong chiefly to the pyogenes group.

Serum Reactions in Pneumonia.—The serum of rabbits immunized by means of suspension of mixed cultures of *B. influenzae* gave for the most part negative immunity reactions. Fixation antibodies were found in high dilutions, using a preparation of the same mixed cultures as antigen. Agglutination reactions were negative when incubated for a short period at 37 C., but positive in from three to six hours at 55 C. The immune serum failed to react with two strains of *B. influenzae* that had not been used in immunizing, thus suggesting the existence of separate groups of *B. influenzae*. The serum of acute influenza cases gave a positive agglutination reaction at 55 C. in dilutions of 1:80 and above, in the majority of instances (88 per cent.) with one of the strains of *B. influenzae* tested. A few tests with another recently isolated strain were also positive in a few instances. Another strain was uniformly negative. Fixation reactions were negative in all but one case with a mixed antigen. The serum from individuals that had recovered from influenza gave agglutination reactions at 55 C. in about two thirds of the instances. Fixation reactions were negative. The serum of individuals that had been vaccinated gave agglutinations at 55 C. in 45 per cent. of the cases.

Fixation reactions were positive in 40 per cent. The normal cases, although few in number, were uniformly negative.

Transmission of Influenza.—This investigation was made for the purpose of ascertaining some possible factors in the mode of transmission of influenza through the use of human subjects for experiments. Two objectives were sought: first, to determine the infectious nature of bacteria-free filtrates as reported by Nicolle; second, to test the pathogenicity of various typical strains of influenza bacilli for man, and ascertain if their use will result in the production of the disease. The nasal application of a filtrate from a pneumonic lung of an individual dead from typical influenza bronchopneumonia failed to call forth any abnormal symptoms. The application to the mucous membrane of the nares and nasopharynx of five healthy men (four inoculated from four to six weeks ago against influenza with a polyvalent influenza vaccine; one uninoculated) of freshly prepared suspension of four different live strain of *B. influenzae* (one, in the second generation from the fatally infected human host) even in massive doses, failed to produce any abnormal symptoms. The implantation of living suspensions of influenza bacilli produced no material alteration besides the addition of the influenza bacillus itself. When experimentally implanted the influenza bacillus disappears from the nares in a relatively short time, in from twenty-four to seventy-two hours. When experimentally introduced in the nasopharynx of man the influenza bacillus exists and multiplies for a considerable length of time, two weeks or more, and apparently shows much resistance to the action of dichloramin-T. In the examination of the nasopharyngeal secretions of patients who were suffering from infections diagnosed clinically as typical influenza and in tissues of the respiratory tract of patients who died of influenzal bronchopneumonia, it was found that the oleate plates frequently gave positive results when the blood and chocolate plates were negative and in addition, by inhibiting the growth of streptococci and pneumococci, greatly facilitated the isolation of the influenza bacillus. In every case the chocolate plate gave more information than the blood plate, which was useful only in picking pneumococci and making a hasty diagnosis of the type of streptococcus present. It is recommended by Wahl and his associates that in the routine bacteriologic examination of all suspected influenza cases, plain infusion, chocolate and oleate or soap agar be used. The blood plate should not be discarded, because it gives information regarding the presence or absence of streptococci and pneumococci that are liable to be missed otherwise and that may play a not unimportant part either in a symbiotic rôle or as a complicating factor.

Journal of Laboratory and Clinical Medicine, St. Louis

October, 1919, 5, No. 1

*Experimental Investigation of Pharmacologic Properties of Active Principle of Commercial Pituitary Extracts and of Comparative Action of Histamin. D. E. Jackson and C. A. Mills, Cincinnati. —p. 1.

Epidemic and Infectious Diseases in Camp Devens, Mass. P. G. Woolley, Cincinnati.—p. 28.

*"Delayed Negative" Wassermann Reaction. G. McConnell, Cleveland. —p. 43.

*Relation of Aortic Insufficiency to Wassermann Test. J. E. Benjamin, Cincinnati, and S. J. Havre, Akron, Ohio.—p. 47.

Literature Bearing on Function of Thymus Gland. W. E. Blatz, Toronto, Canada.—p. 50.

Typhoid and Paratyphoid Fever at Mesves Hospital Center. F. Mock, Chicago.—p. 54.

*Action of Alcohol on Heart and Respiration. E. G. Hyatt, Chicago. —p. 56.

Effect of Epinephrin on Blood Catalase. W. E. Burge, Urbana, Ill. —p. 59.

*Simple Method for Determining Reaction of Feces. W. J. Bruce, New York.—p. 61.

Preservative for Wassermann Reagents; Chloroform the Best Preservative C. Emerson, Lincoln, Neb.—p. 62.

Experimental Investigation of Pituitary Extracts and Histamin.—The intravenous injection of 4 c.c. from a buret into the femoral vein) of a 1:5 dilution of a commercial pituitary extract caused a contraction of the uterus, a very considerable and prolonged rise in blood pressure but scarcely any appreciable effect on the bronchioles. After the effects of the pituitary had mainly worn off another injection of 0.7 mg. of histamin (ergamin) was made. This produced a more marked contraction of the uterus, a sharp fall in blood pressure and considerable contraction of the bronchioles. This contraction of the bronchial musculature tended to pass off but slowly, so that a later injection of 5 c.c. of pituitary extract (1:5) was made in order to determine whether or not this would counteract the action of the histamine. This produced contraction of the uterus and a rise in blood pressure, but no perceptible increase in the previous slow rate of dilatation of the bronchioles. Jackson and Mills conclude, therefore, that this indicates that commercial pituitary extract does not possess much power toward counteracting the constricting influence of histamin on the bronchioles. Various brands of pituitary extract were tested by the authors. They found that certain commercial preparations of the pituitary gland apparently contain very small and very variable proportions of histamin, and the amount of this substance is probably great enough in some samples to exert some therapeutic action. But it is in nowise a necessary constituent of first-class preparations of the posterior portion of the pituitary gland. The true active principle of the posterior portion of the pituitary gland is a simple body of the sympathomimetic amin type, which in the dog produces contraction of the uterus but fails to contract the bronchi. This is in all probability due to an action of the substance on certain nervous elements and not to a direct muscular action. It is suggested that the action of histamin on the bronchioles can be used as a commercial test for the presence of small amounts of this substance in ordinary commercial extracts of the pituitary gland If the findings reported in this paper are substantiated, then there are very obvious clinical advantages in favor of the pituitary extracts rather than of the very intense bronchoconstricting and blood pressure lowering histamin for obstetric uses. But in all probability very small amounts of histamin would not be of any serious disadvantage in these preparations.

Delayed Negative Wassermann Reaction.—McConnell considers it advisable that readings should be taken every fifteen minutes after the hemolytic system has been added and the tubes placed in the incubator or water bath. By so doing there will be a certain number of cases, about 1 per cent., that will give a so-called "delayed negative" reading. Of these patients nearly three fourths will give either a positive or a very suspicious history in regard to venereal infection.

Relation of Aortic Insufficiency to Wassermann Test.—Benjamin and Havre report thirty-three cases of aortic insufficiency unassociated with any other organic cardiac disease from a clinical standpoint. Wassermann reactions, taken in each case, were positive in only 11 per cent. as against the reported higher rates of other writers. Undisputed histories of rheumatism were obtained in 57 per cent. of cases. Questionable histories of rheumatism and histories of frequent attacks of tonsillitis were noted in 15 per cent. A tabulation of results as regards occupation, age, race and incidence is given.

Action of Alcohol on Heart and Respiration.—The experiments performed by Hyatt indicate that when alcohol is administered to an unanesthetized animal by mouth there is a rapid rise in blood pressure and respiratory rate and an immediate return to normal. This is due to local action. Intravenously, gradually, in quantities sufficient to kill in one or two hours, there is no effect until just before death, when a rapid fall of pressure takes place. Given rapidly there is a sudden fall followed by an immediate return to the normal. There is no effect if the vagi are cut. When alcohol is introduced by means of a stomach tube there is no effect. When alcohol is introduced intravenously without excitement in the normal dog, there is no stimulation of the heart or respiration.

Simple Method for Determining the Reaction of Feces.—Bruce uses a 1 per cent. aqueous solution of alizarin as the indicator. Two small drops are placed on a glass slide about 1½ inches apart. A small portion of the specimen is mixed

thoroughly in one of the drops of the indicator, using the other drop as a control. An alkaline reaction is indicated by a reddish violet to violet color, neutral reaction, no changes, and acid, by a light yellow color. The density of these colors will depend on the amount of acid or alkali present.

Mental Hygiene, Concord, N. H.

October, 1919, **3**, No. 4

*Mental Defect in a Southern State (Georgia). V. V. Anderson, New York.—p. 527.
*State Program for Care of Mentally Defective. W. E. Fernald, Boston.—p. 566.
Dementia Praecox as a Social Problem. H. M. Pollock, Albany, N. Y.—p. 575.
Experiment in Occupational Therapy at Base Hospital 117, A. E. F. S. I. Schwab, St. Louis.—p. 580.
Disciplinary Problems of Army. H. M. Adler, Springfield, Ill.—p. 594.
Function of the Social Worker in Relation to State Hospital Physician. H. D. Singer, Springfield, Ill.—p. 609.
Function of the Social Worker in Relation to a State Program. G. M. Kline, Boston.—p. 618.
Place and Scope of Psychiatric Social Work in Mental Hygiene. M. Ryther, Plattsburgh, N. Y.—p. 636.
Current Misconceptions Regarding Reformation. G. G. Fernald, Concord, N. H.—p. 647.
Psychopathic Clinic of Children's Court of New York City. H. Montague, New York.—p. 650.

Mental Defect in Georgia.—This is the report of the Georgia commission on feeblemindedness and the survey of the national committee for mental hygiene prepared with the assistance of Anderson. This report emphasizes the conditions found elsewhere, viz., that mental deficiency forms the very root of crime, prostitution, hereditary pauperism, and the like, conditions for which the state is spending vast sums of money. These problems are preventable. Expense is not an excuse. It is simply a question of whether the state will pay blindly or intelligently—whether it will pay in crime, in courts, in reformatories, in prisons, in almshouses, or in prevention, in intelligent care and training of these feebleminded children in schools and institutions suited to their particular needs, in special class instruction of them in the public schools, and proper supervision of them in the community. The report recommends the establishment of a training school and farm colony for feebleminded persons; special classes in the public schools; state wide supervision; mental clinics, and laws for the commitment of the feebleminded.

Care of the Mentally Defective.—The program outlined by Fernald includes the mental examination of backward schoolchildren; the mental clinic; the traveling clinic; the special class; directed training of individual defectives in country schools; instruction of parents of defective children; after-care of special class pupils; special training of teachers in normal schools; census and registration of the feebleminded; extra institutional supervision of all uncared for defectives in the community; selection of the defectives who most need segregation for institutional care; increased institutional facilities; parole for suitable institutionally trained adult defectives; permanent segregation for those who need segregation; mental examination of persons accused of crime and of all inmates of penal institutions; and long continued segregation of defective delinquents in special institutions.

Michigan State Med. Society Journal, Grand Rapids

November, 1919, **18**, No. 2

Adaptation of War Surgery to Civilian Practice. F. B. Walker, Detroit.—p. 551.
Practical Points About Eye, Ear and Nose Work. C. H. Baker, Bay City, Mich.—p. 555.
Diagnosis of Diseases Causing Gastric Disturbances. A. O. Hart, St. Johns, Mich.—p. 558.
Brain Injuries. L. Dretzka, Detroit.—p. 559.
Epidemic Cerebrospinal Meningitis at Camp Jackson, S. C. F. W. Baeslack, Detroit.—p. 561.

Minnesota Medicine, St. Paul

November, 1919, **2**, No. 11

Open and Closed Treatment of Fractures; New Methods and New Apparatus Used. A. E. Wilcox, Minneapolis.—p. 413.
Studies in Influenza. E. C. Rosenow, Rochester, Minn.—p. 423.
Gradenigo's Syndrome as a Late Complication Following Mastoidectomy. Report of Case. A. E. Smith, Minneapolis.—p. 424.
New Needle for Intravenous Administration of Antisyphilitic Medication by Longitudinal Sinus, Given in Children. T. L. Birnberg, St. Paul.—p. 425.
Program of State Board of Health for Control of Venereal Diseases and What Results May Be Expected. H. G. Irvine and M. S. Ulrich, Minneapolis.—p. 428.
Refractive Needs in Children. E. A. Loomis, Minneapolis.—p. 435.

Missouri State Medical Association Journal, St. Louis

November, 1919, **16**, No. 2

Why Prenatal Care? C. A. Ritter, Kansas City.—p. 359.
Diagnostics of Disease in Infancy. C. G. Grulee, Chicago.—p. 366.
Influenza in France (in A. E. F., 1918). L. Sale, St. Louis.—p. 373.
*Syphilis as an Etiologic Factor in Epilepsy. D. S. Booth, St. Louis.—p. 374.
Work of Neuropsychiatrists in U. S. Army Camps. H. S. Major, Fulton, Mo.—p. 377.
*Congenital Pyloric Stenosis. R. Hill, St. Louis.—p. 379.
Congenital Pyloric Stenosis, Pylorospasm and Chronic Appendicitis. C. A. Potter, St. Joseph, Mo.—p. 380.

Syphilis as Cause of Epilepsy.—In Booth's experience the proportion of epipleptics giving a Wassermann reaction in some degree is much greater than that given in available statistics, and he feels confident that the laboratory has not detected all cases in which syphilis was either directly or indirectly an etiologic factor. Though some of his cases of epilepsy have shown only a two plus Wassermann and a few only a one plus reaction, he is treating them as though specific in origin and with encouraging results. Those giving a one plus Wassermann have been almost entirely children or women in whom Booth had reason to believe that if syphilis were present at all it was hereditary.

Congenital Pyloric Stenosis.—Hill's personal experience in congenital pyloric stenosis comprises twenty-five cases with sixteen recoveries and nine deaths. Of this number fourteen patients were operated on by posterior gastro-enterostomy with only six recoveries. Hill has done eleven operations by the method of Ramstedt and ten of the patients recovered. Hill concludes that all cases of congenital pyloric stenosis should be submitted to operation if the patient does not make immediate gain on tube feeding. The patient will only gain on tube feeding in case the obstruction is very slight.

Modern Medicine, Chicago

October, 1919, **1**, No. 6

Air Control and Reduction of Death Rate After Operations. E. Huntington, New Haven.—p. 463.
Medical Supervision of Students at Wisconsin. C. R. Bardeen, Madison.—p. 468.
University of Iowa as a State Medical Center. H. Chamberlin, Iowa City.—p. 478.
Medical Extension Work. D. K. Martin, Columbus, Ohio.—p. 485.
Medical and Hospital Treatment Under United States Compensation Act. J. W. Trask, Washington, D. C.—p. 489.
Uses of Motion Pictures in Industrial Diseases. L. W. Sprague, New York.—p. 496.
Health Service Through Employees' Mutual Benefit Association. B. Hall, Milwaukee.—p. 499.
Carbon Monoxid Poisoning. R. P. Albaugh, Cleveland.—p. 505.
Rôle of Ventilation in Preventive Medicine. G. T. Palmer, New York.—p. 505.
Neighborhood Organization vs. Tuberculosis. N. A. Nelson, Cincinnati.—p. 515.
Critical Survey of Public Health Topics. J. Schevitz, Oklahoma City.—p. 522.
Physician and Human Conservation. J. H. McBride, Pasadena.—p. 528.
Convalescent Care. M. B. Hexter, Boston.—p. 532.
Scabies in Relation to Community. A. Ravogli, Cincinnati.—p. 543.

New Orleans Medical and Surgical Journal

October, 1919, **72**, No. 4

Administration of Tuberculins. W. J. Durel, New Orleans.—p. 164.
Making the Cure of Goiter Safe. L. Levy, New Orleans.—p. 170.
Radium Therapy. E. C. Samuel, New Orleans.—p. 177.
Race Degeneration: What Can We Do to Check It? R. M. Carruth, New Roads, La.—p. 183.
Observation of Drug Addict. O. Dowling, Shreveport.—p. 190.
Use and Abuse of Drugs in Treatment of Addicts. J. A. O'Hara, New Orleans.—p. 195.
Venereal Disease: A National Problem. W. Edler, U. S. P. H. S.—p. 210.
Tendencies of Times, Medical and Otherwise. L. G. Stirling, Baton Rouge, La.—p. 217.
Surgical Treatment of Typhoid Carriers. H. J. Nichols, J. S. Simmons, C. O. Stimmel, U. S. Army.—p. 220.

Oklahoma State Medical Assn. Journal, Muskogee

October, 1919, **12**, No. 10

Syphilis of Digestive Tract. J. T. Martin, Oklahoma City.—p. 273.
Syphilis of Eye. A. S. Piper, Enid.—p. 276.
Treatment of Chronic Urethritis. T. B. Coulter, Tulsa.—p. 281.
Gonorrhea in Female. C. P. Linn, Tulsa.—p. 286.
Clinical Report of Operation on Puerperal Suppurative Mastitis. F. S. Clinton, Tulsa.—p. 291.

Southern Medical Journal, Birmingham, Ala.

October, 1919, **12**, No. 10

Treatment of Meningococcic Infections. W. W. Herrick, New York.—p. 587.
*Clinical Significance of Achyla Gastrica. H. G. Beck and H. McLean, Baltimore.—p. 594.
*Duodenal Lavage in Treatment of Catarrhal Jaundice: Case Report. J. W. Ousley, Kansas City.—p. 597.
Preventive Medicine and Some Present Day Problems. W. S. Leathers, University, Miss.—p. 601.
Rural Health Work. P. G. Pope, Columbia, Miss.—p. 608.
*Significance of Sigmoid Adhesion. H. A. Royster, Raleigh.—p. 613.
Rectal Strictures: Cancer Problem. J. L. Jelks, Memphis.—p. 615.
Elting Operation for Fistula in Ano; Report of Case. G. T. Tyler. Greenville, S. C.—p. 617.
*Enterostomy for Postoperative Paralytic Ileus. J. C. Culley, Oxford, Miss.—p. 618.
Epididymotomy Treatment of Acute Gonorrheal Epididymitis. T. B. Hubbard, Montgomery, Ala.—p. 619.
Radium and Roentgen Ray in Gynecology. W. A. Weed, Birmingham.—p. 621.
Nitrous Oxid-Oxygen Anesthesia. A. G. Brenizer, Charlotte, N. C.—p. 623.
Psychology of Asthenopia. T. A. Cheatham, Birmingham.—p. 626.

Etiology of Achylia Gastrica.—Beck and McLean made a study to determine if possible, the existence of some relationship of achylia gastrica with any particular disease or group of diseases, in addition to the influence of age, sex, habits, etc., as etiologic factors. It was present in approximately 11 per cent. of gastro-intestinal cases. One hundred and forty-three focal and systemic infections occurred in seventy-seven achylic patients. Of these, 108 were definitely focal and thirty-five were systemic. And of the focal, sixty-nine were about the head, chiefly as some form of oral sepsis. Chronic cholecystitis, appendicitis, arthritis, pyelitic and rectal abscess, comprising thirty-nine infections, formed the remainder of the group. In thirty-three cases there was disturbance of the endocrine functions, including the thyroid, parathyroids, pituitary and gonads. None of the cases of suprarenal insufficiency were achylic. Nervous or reflex disturbances in themselves are not etiologic factors. Exclusive of carcinoma of the stomach and advanced stages of chronic interstitial gastritis, gastro-intestinal disturbances are either incidental or secondary to achylia. It would appear that cardiorenal and metabolic diseases occur coincidently with chronic infections and play an unimportant part in the etiology of achylia gastrica. Alcohol and tobacco in excess without focal infections will apparently not produce achylia. The excessive use of tea and coffee may produce it.

Duodenal Lavage in Catarrhal Jaundice.—Ousley has not encountered any unpleasant by-effects from the use of duodenal lavage and clinical cures have resulted in all his cases. He has used the following diet with satisfactory results: milk, buttermilk, green vegetables, peas, beans, tomatoes, asparagus, spinach, celery, lettuce, watercress, endive and chicory; fruits of all kinds, except those high in starch or sugar; orangeade, lemonade, and one orange and lemon three times a day between meals, lean meats, chicken and eggs; soups, all stock soups and bouillons—soups to be served twice a day; bread, crackers and dry toast, oatmeal, cream of wheat, farina and rice; and desserts, such as junkets, custards, gelatin, prune whip, stewed and baked fruits, and grape fruit. No tea, coffee or cocoa is allowed.

Significance of Sigmoid Adhesion.—Royster emphasizes the etiologic relationship between left sided pain and adhesions of the sigmoid. He has operated on sixty patients with good results. Attention was directed to the adhesion in many instances by the failure to cure left sided pain by previous operations only to discover the overlooked sigmoid kink on reopening the abdomen and to secure a cessation of symptoms by cutting and suturing the adhesion.

Enterostomy for Postoperative Paralytic Ileus.—In cases of ileus which will not warrant any prolonged operative procedure or the handling of the bowel any more than is absolutely necessary, Culley says, all that should be done is to protect the peritoneum as much as possible and to make an opening into the distended loop or loops of intestine, provide adequate drainage and thereby relieve the distention and eliminate the toxic substances.

Texas State Journal of Medicine, Fort Worth

October, 1919, **15**, No. 6

*Enema and Purge in Preoperative and Postoperative Treatment. J. T. Moore, Houston.—p. 208.
*Radium. G. H. Lee, Galveston.—p. 210.
Collargolum. I. L. Van Zandt, Ft. Worth.—p. 214.
Diagnosis and Treatment of Conjunctivitis. N. H. Bowman, Waco.—p. 216.
Reflex Disturbances Originating in the Nose, Throat and Mouth. S. J. Clark, Austin.—p. 219.

Enema and Purge in Preoperative and Postoperative Treatment.—From a study of the physiology of the intestinal tract and digestion, Moore is convinced that there is no reasonable basis for giving a laxative or purge preceding any operative procedure.

Use of Radium.—Lee would restrict the use of radium to inoperable cancer of the uterus, giving it in heavy dosage and intra-uterine. The dosage should be repeated every four or six weeks, and the case carefully watched for changes in the parametrium, etc. Should the uterus become mobile and removable by hysterectomy, that should be done, with due regard, in deciding the question of operation, to the shrinkage and sclerosis of the tissues and the increased difficulty of operation. Operable conditions should be dealt with surgically, and should be preceded and followed by exposure to the gamma rays, with careful dosage, regulated in conformity to the character of tissues exposed. Recurrences in the vagina should be treated persistently, but with very moderate and repeated exposure.

Wisconsin Medical Journal, Milwaukee

October, 1919, **18**, No. 5

Psychoneuroses and Surgery. H. E. Wolf, La Crosse.—p. 152.
Focal Infection. F. G. Connell, Oshkosh.—p. 157.
High Spots in History of Anatomy. H. M. Brown, Milwaukee.—p. 165.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

Oct. 11, 1919, **2**, No. 3067

*Cure of Crippled Children: Proposed National Scheme. R. Jones and G. R. Girdleston.—p. 457.
Tranquil Tracheotomy; Injecting Cocain within Trachea. St.C. Thomson.—p. 460.
*Case of Coexistent Suprarenal and Renal Disease of Uncertain Origin. H. G. Sparrow and W. S. Soden.—p. 461.
Two Cases of Tuberculosis with Cholesterin Pleural Effusion. H. Sharpe.—p. 462.
Pericardial Effusion of "Gold-Paint" Appearance Due to Presence of Cholesterin. J. S. Alexander.—p. 463.
*Treatment of Inoperable Carcinoma with Selenium. E. Watson-Williams.—p. 463.
Surgical Anesthesia among British Troops in Tropics (India). L. M. Routh.—p. 464.
Case of Poisoning by Hydroquinon. A. Mitchell and J. Webster.—p. 465.

Cure of Crippled Children.—Jones and Girdlestone bring forward proposals for the establishment of a system of orthopedic hospitals and clinics for the active treatment of cripples, and more particularly of crippled children, throughout the country. In Shropshire a system of hospital and outpatient treatment has been organized. As a direct consequence many hundreds of children have been cured or greatly benefited. Further, through the outpatient clinics many cases have been brought to light which would otherwise have remained unknown and untreated. The proposals put forward concern the multiplication of this organization throughout England and Wales, under he ministry of health. Rickets and surgical tuberculosis taken together account for 40 per cent. of the crippled children under treat-

ment. Patients under treatment for congenital deformities and paralysis constitute 45 per cent. of the total number of cases. The authors propose the division of the country into a number of districts; the establishment in each district of (1) an open air country orthopedic hospital; and (2) a system of scattered outpatient clinics. The organization of efficient treatment and the general coordination by a committee working under the ministry of health. The expenses of maintaining such a series of hospitals and dispensaries are to be met by the government, the local authorities and the patients: Private wards for those who could pay full fees; arrangements by which all patients should make a contributory payment who could afford to do so; arrangements by which local authorities should pay at least part of the cost of the poorer patients.

Coexistent Suprarenal and Renal Disease.—The outstanding clinical features in the case reported by Sparrow and Soden were those of profound Addison's disease, but the presence of albuminuria and of purpura rendered diagnosis very difficult. In this case, occurring at the time when malignant malaria was rife among the troops of the Egyptian expeditionary force, the patient received quinin treatment in spite of negative blood films. The postmortem appearances were not those of true Addison's disease. An interesting point in the case is the absence of all visible signs of cardiac hypertrophy so common in renal disease, explicable, perhaps, by the deficiency of epinephrin.

Treatment of Inoperable Carcinoma with Selenium.—Although Williams has seen some good result from the use of selenium in cases of inoperable cancer, he has seen nothing so far to suggest that selenium will cure carcinoma.

Dublin Journal of Medical Science

August-September, 1919, Third Series, Nos. 572-573

*Removal of Foreign Body (Bullet) from Lung. S. Pringle.—p. 49.
Secondary Suture of Wounds. R. A. Stoney.—p. 52.
Cholera; Its Early Treatment. A. G. Varian.—p. 66.
Sleep: Normal and Abnormal. E. H. C. Allen.—p. 75.
Direct Reading Localizer for Roentgen-Ray Work. E. O. Marks.—p. 96.

Removal of Foreign Body from Lung.—In Pringle's case a rifle bullet was lodged in the lower lobe of the lung for two and one-half years. The patient suffered considerable pain with any exertion, and Pringle felt justified in advising its removal. Four inches of the seventh rib were excised subperiosteally from the midaxillary line backward. On opening the pleura no adhesions were found. The hand was passed into the chest and grasped the part of the lung involved, which was delivered through the incision, and then caught in a rubber covered forceps. The bullet was easily felt about an inch deep in the lung. An incision was made over it, and it was easily extracted. The space in which it lay was swabbed with ether, and obliterated by two mattress stitches of catgut, which completely controlled the slight hemorrhage present The whole area involved was buried by a continuous Lembert suture of the visceral pleura. The part of the lung which had been withdrawn from the chest was sponged with ether and returned to the thoracic cavity. The parietal pleura was then sutured by a continuous mattress stitch everting the edges. Before the last stitch was tied the lung was expanded tightly against the pleura, thus expelling the air from the pleural cavity. The muscles were stitched in two layers, and the skin was united with a continuous suture. No drainage was employed. Immediately after the operation air could be heard entering the lung freely. The patient made a rapid recovery without interruption apart from a mild bronchitis of both sides and a slight amount of localized surgical emphysema.

Edinburgh Medical Journal

October, 1919, **23**, No. 4

Wound Treatment by Means of Eusol. With Special Reference to Methods of Continuous Irrigation and Lavage. J. B. Hogarth.—p. 214.
Hysterical Complications of "Rheumatism." R. G. Gordon.—p. 228.
Future of Teaching of Clinical Medicine. T. Addis.—p. 235.
Field Ambulance in Gallipoli, Egypt, Palestine, and France. J. Young.—p. 244.

Indian Medical Gazette, Calcutta

September, 1919, **54**, No. 9

Madras Tuberculosis Institute. E. S. Murie.—p. 321.
Oriental Sore or Baghdad Boil. D. J. Harries.—p. 325.
*Flagella of Spirocheta Carteri. P. R. Bhandarkar.—p. 327.
Temporary Officer in War. A. D. M. S.—p. 327.
*Snake Venom as a Therapeutic Agent. F. Wall.—p. 330.
Simplicity in Prevention and Cure of Bacterial Infection.—p. 331.
Treatment of Fracture of Patella. F. F. S. Smith.—p. 336.
Case of Daboia Poisoning. W. R. Taylor.—p. 337.
Colloidal Preparations in Modern Treatment. Colloidal Sulphur and Mercury in Specific Arthritis. N. N. Makerjee.—p. 338.
Malunion in a Fractured Tibia, Due to Tendon of Tibialis Anticus. D. J. Harries.—p. 340.
How a Snake Catches His Prey. K. A. Darukhanewala.—p. 340.

Flagella of Spirochaeta Carteri.—Bhandarkar and his associates succeeded in demonstrating one or two flagella at one or both ends of the organism, using the method of Nicolle and Morax.

Snake Venom as a Therapeutic Agent.—Many snake venoms have an immensely toxic effect on all forms of animal life, and it seems probable to Wall that they might prove destructive to such pathogenic animal organisms as the trypanosoma, *Spirillum obermeieri*, *Spirochaeta pallida* and the plasmodium. It is a general rule, so far as the higher animals are concerned, that the lethal dose of snake venom depends on the size of the animal. If this holds good all down the animal kingdom, a dose of snake venom necessary to kill such lowly organisms as those enumerated above, would be innocuous to the host infected by them.

Japan Medical World, Tokyo

Sept. 21, 1919, No. 301

*Passage of Micro-Organisms Through Normal Organs. I. Terauchi.
*Action of Radium and Mesothorium on Vaginal Tuberculous Lesions. M. Shiraki.

Sept. 28, 1919, No. 302

Clinical Treatment of Schistosomiasis. Y. Nagao.
*Change in Ovary of Rabbit Injected with Alcohol. Y. Yamazaki.

Oct. 5, 1919, No. 303

*Complement Fixation Test of Serum in Uncinariasis. K. Usami.
Comparative Study of Action of Some Ergot Preparations on Uterus and Intestine. S. Takaori.
Development of P. westermanni in Eyeball and Orbit. S. Suyemori.

Passage of Micro-Organisms Through Normal Organs.—Terauchi carried out experiments on the problem whether micro-organisms pass through normal organs. He employed mostly rabbits and albino mice. He affirmed the fact that the conclusion arrived at by some investigators, that micro-organisms do not pass through the normal kidneys, was reached by employing animals that had a strong bactericidal property in their blood. The fact is that micro-organisms really pass through normal kidneys but the passing of the micro-organisms into the urine depends on the strength of the bactericidal property of the animal's blood. Under ordinary conditions the normal placenta does not allow *B. subtilis* to pass through its tissues, but when the resistance of the peripheral blood vessels of the mother is lowered, micro-organisms can be made to pass through the placental tissues. *S. duttoni* passes through the normal placental tissues into the fetus. Micro-organisms injected into the fetus passed through the placenta into the maternal body.

Action of Radium and Mesothorium on Vaginal Tuberculous Lesions.—Shiraki found that radium and mesothorium destroy the lesion and the fibrinous change of the local tissues, and even after three years no reinfection has been observed to occur. The destruction of the superficial tissues occurs in the pathologic lesions as well as in the normal tissues. They are necrosed and slough off, while in the deeper tissues the degeneration of the connective tissues takes place until cells assume the embryonic state, from which reformation of the new tissues takes place. The author has been unable to demonstrate microscopically the action of these rays against the bacilli. It seems highly possible, however, that the infecting bacilli are so enveloped by the connective tissues that they are unable to maintain life. Amelioration of the general symptoms, restoration of the normal temperature, the gain in body weight, the

increase of the hemoglobin, the gain in appetite, etc., are brought about as the local improvement is attained.

Change in Ovary Following Injection with Alcohol.—Fifty per cent. and 25 per cent. solution of alcohol was injected by Yamazaki into the auricular vein of rabbits. The ones that had been given a moderate quantity of alcohol for a long period of time continuously showed severer changes than any others. The most conspicuous changes take place in the medullar tissues of the ovary. The interstitial connective tissues are seen to increase considerably, while the interstitial gland cells degenerated. From the fact that around the interstitial cells a remarkable increase of the connective tissues has been demonstrable, it would seem very probable that the increased growth of the interstitial connective tissues must be the primary change, while the change in the interstitial gland cells must be the secondary. Other changes are: the increased growth of the cysts and also the thickening of the cyst walls.

Complement Fixation Test of Serum of Uncinariasis.—By testing the serum of uncinariasis as to the complement fixation with the alcohol extract of the hookworm as antigen, almost all cases produced positive results. It was not only positive against the serum of the patient infested by ascaris. The complement fixation, therefore, is by no means specific. It is, however, noteworthy that the hookworm antigen produced a negative result against the serums of tuberculous cases, of syphilitics and also of normal persons, who had been proved free from any parasites.

Journal of State Medicine, London

October, 1919, **27**, No. 10

Housing in Relation to National Health from the Medical Aspect. E. W. Hope.—p. 289.
*Scheme of Treatment of Tuberculosis. H. H. Thomson.—p. 297.
Social Care of Child. L. Mackenzie.—p. 306.
Housing in Relation to National Health from Citizen's Aspect. N. Chamberlain.—p. 312.
Suggested Overseas Community Health Settlements for British Ex-Service Men. E. S. Scammell.—p. 314.

Scheme of Treatment of Tuberculosis.—The essential units of a complete tuberculosis scheme according to Thomson are: (1) An improved method of notification to provide fuller information regarding the type of the disease and the circumstances of the patient. (2) An efficient and coordinated system of dispensary and domiciliary treatment. (3) The provision of adequate hospital accommodation for acute and advanced cases of tuberculosis with compulsory powers of removal. (4) The provision of up-to-date sanatorium accommodation combined with facilities for the industrial training of parents. (5) The provision of large hospitals for the conservative treatment of nonpulmonary tuberculosis; each hospital to serve a large district and population. (6) The provision of sanatorium accommodation for children and of facilities for open-air instruction in connection with hospital, sanatorium and schools. (7) The incorporation in the scheme of an after-care unit with an emigration and employment bureau. (8) And lastly, the carrying out of a comprehensive scheme of scientific investigation and preventive effort with a view to the control and final abolition of tuberculosis.

Journal of Tropical Medicine and Hygiene, London

Oct. 1, 1919, **22**, No. 19

*Prevention of Mosquito Breeding. J. A. Delmege.—p. 181.

Prevention of Mosquito Breeding.—Delmege describes the methods for the prevention of mosquito breeding carried out in Macedonia in an area of which the chief natural features were rocky streams and deep ravines intersecting the hills; scattered marshy areas and isolated chains of pools on the plain, and large cultivated areas provided with irrigation channels. The methods used were those suitable to an army in occupation of a mosquito breeding area for a comparatively short period, and were therefore of a temporary nature, although they should be easily adaptable in a modified form to the needs of any small community living in a malarious district. The methods used were constructional, canalization, etc., and larvicidal, use of cresol and paraffin.

Lancet, London

Oct. 11, 1919, **2**, No. 5015

Army Medical Service as a Career. J. Goodwin.—p. 631.
*Cases of Bilharziasis Treated by Intravenous Injections of Antimonium Tartaratum. G. C. Low and H. B. G. Newham.—p. 633.
*Causes of Failure in Vaccine Treatment of Arthritis, Rheumatism and Neuritis. H. W. Crowe.—p. 637.
*Diurnal Variation in Body Weight in Tuberculous Patients. J. M. Scott.—p. 639.
Trench Fever and War Nephritis. J. H. Lloyd.—p. 640.
Case of Sacculated Aneurysm of Abdominal Aorta. H. A. Haig.—p. 649.
*Relation Between Chorea and Rheumatism. H. L. Cronk.—p. 646.
"Idiopathic Tetanus"; Recovery. W. B. Cosens.—p. 646.
*Long Retained Foreign Body in Bronchus. A. W. Lemarchand.—p. 646.

Antimony Tartrate in Bilharziasis.—Five cases are cited by Low and Newham in which antimony tartrate was used with good effect. The dose varied from 16 to 30 grains. The authors recommend that the dose should be small to begin with (one-half grain), and then gradually worked up to see how the patient will stand it; 2½ grains at a dose may be considered the maximum, any increase on that being dangerous. The dilution of the drug is also important; the authors always give it dissolved in 60 c.c. of sterile physiologic sodium chlorid solution, and run it in through a fine needle as near as possible at blood heat. The solution is made up fresh a few hours before the time of administration, an important point; it must not be given old or after standing a long time. Too concentrated solutions are dangerous. Generally, the drug is given twice a week; it should not be administered more frequently than this. The best plan is to keep the patient in bed the day of the injection, and only to let him up next day if no untoward symptoms have taken place. All symptoms must be carefully recorded, and any indications of gastric or constitutional disturbance must be considered in detail, and if bad and recurring at each injection may contraindicate further injections. The urine must be examined to exclude nephritis and faulty elimination from the kidneys. Albumin of itself does not contraindicate the injections if this is part of the disease, but the injections should then be given with the greatest caution. Rigors are not uncommon after some of the injections, and cough immediately after is often troublesome.

Vaccine Treatment of Arthritis.—The causes of failure in the vaccine treatment of these conditions are grouped under six heads by Crowe: (1) false diagnosis; (2) errors in bacteriology; (3) incorrect or inefficient vaccine; (4) faulty administration of vaccine in regard to dosage and interval; (5) peculiarities in the constitution of the patient and in his response to vaccines; (6) mistakes in general treatment.

Diurnal Body Weight in Tuberculous Patients.—Out of a total of 962 recorded weights, Scott found that 146 showed no variation, 205 showed an increase, and 611 showed a decrease. The average increase was 0.77 pound. The average decrease was 1.03 pound. Scott concludes that a tuberculous patient will record a greater fall in weight in the morning, as compared with the afternoon weight, than a person who is merely a suspect. Also, that where an increase is recorded in a positive case, that increase is likely to be less than an increase in a suspect case The more serious and advanced the disease the greater the variation in weight recorded.

Relation Between Chorea and Rheumatism.—The relationship between chorea and rheumatism in childhood is shown in a striking manner by Cronk's findings in two series of 200 cases each, the patients being children, from 2 to 14 years of age.

Long Retained Foreign Body in Bronchus.—Lemarchand cites the case of a woman, 50 years of age, who retained the cervical vertebra of a rabbit in a bronchus four years before it was expelled by coughing.

Annales de Médecine, Paris

September, 1919, **6**, No. 4

*Diaphragmatic Hernia. A. Cade and R. Montaz.—p. 245.
*Mechanism of Death in Influenza. M. Renaud.—p. 267.
*Hypertrophy of Nerves. G. Roussy and L. Cornil.—p. 296.
*Lethargic Encephalitis. J. Lhermitte.—p. 306.

Latent Diaphragmatic Hernia.—Cade and Montaz describe three sets of symptoms with a possibly unsuspected diaphragmatic hernia according as the digestive organs, the heart or the lungs are most hampered by the hernia. Treatment can be only surgical, but in the well tolerated congenital cases, there may be no need for operative measures if the patient is kept under relative medical surveillance.

Mechanism of Death in Influenza.—A similar article by Renaud was summarized recently in these columns, September 27, p. 1016, and he here reiterates the importance of regarding and treating influenza from the start as an epidemic form of pneumococcus infection inducing multiple foci of consolidation in the lung and thus hampering the heart action. This conception imposes the necessity for bed rest from the first symptoms of catarrh and slight congestion in the lungs. Nothing is more effectual in combating congestion, he says, than hydrotherapy, extensive cold packs, etc. The hydrotherapy should be supplemented with digitalis, and in the graver cases an intravenous injection of 0.25 or 0.5 mg. of epinephrin followed in twenty minutes with 20 or 40 c.c. of antipneumococcus serum. (He used the antiserum made by the Pasteur Institute.) The reaction to this is dramatic, the pulse running up to 140 and growing small, the temperature to 104 F. or higher. But this crisis is brief and transient, and in all the twenty-seven cases was followed by entrance on convalescence, the fever dropping with profuse diuresis and the signs of congestion in the lung subsiding. Three typical charts show the unmistakable benefit following this treatment, the temperature in one day dropping from 40.8 C. to normal; from 41.8 C. to subnormal, and from 41.8 C. to 38.5 C. The injection had been made the eleventh, the fifth and the third day, respectively, in these three cases.

Hypertrophy of Nerves.—Roussy and Cornil report a case of progressive hypertrophic neuritis in an agricultural worker of 44, resembling Dejerine's progressive and hypertrophic interstitial neuritis in children except that the onset was at the age of 40, that there is no Argyll Robertson sign, no myosis, nystagmus nor general atrophy of muscles, while there is intentional tremor. It differs also from the Marie type by the lack of a familial tendency, scanning speech and exophthalmos, and the atrophy of muscles is limited to the arms. It thus forms a third type of progressive hypertrophic neuritis, nonfamilial, and occurring in adult life.

Lethargic Encephalitis.—Lhermitte declares that the disease called by this name is an infectious process involving the midbrain. He does not regard it as a form of influenza but suggests that the latter seems to pave the way for it, possibly by enhancing the virulence of the pathogenic agent responsible for it. Treatment with convalescents' serum is promising, but there are so few convalescents that this treatment is not practicable. The only drug that seems rational to date is hexamethylenamin as this in the nerve centers and cerebrospinal fluid displays some bactericidal efficacy. He gave it by the mouth and by the vein in daily doses of 1 or 1.25 gm. In one particularly severe case he injected the drug intravenously several times, immediately after withdrawal of fluid by lumbar puncture, hoping thus to facilitate the passage of the drug into the cerebrospinal fluid. Whether due to coincidence or effect, general and local improvement followed at once. This method, he says, is entirely harmless.

Archives Médicales Belges, Liége

May, 1919, **72**, No. 5

*War Wounds of Joints. L. Delrez.—p. 513.
*Partial Epilepsy. F. D'Hollander.—p. 537.
*Gastritis from Corrosive Fluid. H. Koettlitz.—p. 562.
Modifications in the Blood after Wounds and Operations. H. Fredericq.—p. 569.

Wounds of Joints.—Delrez recalls that the synovialis has to be protected against both blood and infection, and he reviews his experience in this line in 190 cases of wounds of the larger joints. Infection developed in only twenty-one cases, including 16 in the knee. Treatment by arthrotomy and Willems' method of active mobilization gave extremely satisfactory results. It requires great energy on the patient's part and makes great demands on the physician's time, but it well repays for all this. In cases in which active mobilization is out of the question, he applied passive mobilization and the results even of this were better than after resection.

Partial Epilepsy.—The woman of 50 in D'Hollander's case developed partial epilepsy, motor incoordination, attacks of petit mal, hypo-esthesia, monalgia, etc., but all this train of sensory-motor symptoms was restricted to the left arm. There was a history of healed pulmonary tuberculosis, and the sudden appearance of the partial epilepsy and its final retrogression incriminate some acute tuberculous process as responsible for it, some small patch of meningo-encephalitis such as is common in the tuberculous. He discusses each of the symptoms in turn, and reiterates that this and similar cases confirm that the so-called psychomotor sphere is in reality a mixed motor-sensory region.

Gastritis from Corrosive Fluid.—Koettlitz relates the case of a young woman who was given hydrochloric acid by mistake on the eve of an operation for chronic appendicitis. She was given milk of magnesia at once and was fed for a week with only ice and diluted milk. Then she went home but returned to the hospital within a week vomiting repeatedly, and gastro-enterostomy became necessary by the end of the eighth week. She was then doing well when hemorrhagic purpura developed and later aphthous stomatitis and she succumbed the tenth week. The caustic fluid had evidently passed through the esophagus and the cardia so rapidly that the walls had not been injured, the pylorus region bearing the whole brunt of the corrosive action.

Bulletin Médical, Paris

Sept. 6, 1919, **33**, No. 38

Sodium Cacodylate. H. Maréchal.—p. 492.

Sept. 13, 1919, **33**, No. 39

*Purpuric Nephritis in Children. P. Nobécourt.—p. 503.

Purpuric Nephritis in Children.—Nobécourt's patient was a girl of 15 who for four months had been presenting symptoms of rheumatoid purpura, but there had been no epistaxis, hematemesis or melena, and the purpuric eruption had never progressed to ecchymoses. Blood was noted in the urine on two occasions, and from 0.3 to 0.5 gm. albumin per liter was found constantly in the urine. These findings testify to simple albuminous nephritis persisting after the subsidence of the purpura. This purpuric nephritis is rarely accompanied by edema, uremia or high blood pressure. Even with retention of chlorids, this is slight and transient. On the other hand, purpuric nephritis without hematuria may be more tenacious; the albuminuria may persist for two, four or six months. Osler has published a case in which the purpura progressed in severe waves, with violent abdominal crises, and edema. The urine contained albumin and casts but no blood, and the child finally died in uremic convulsions. In Nobécourt's own experience, bacteriologic examination was always negative. He never found azotemia, and the nephritis only exceptionally passed into a chronic phase. The hematuric form may subside completely in four or five weeks after an acute course, but usually it runs a subacute course and gradually improves, or it may persist indefinitely. It proved rapidly fatal, or only after several months, in about 25 per cent of the cases cited. The characteristics resemble those of what we call primary nephritis or nephritis of unknown origin. Treatment should be addressed both to the purpura and to the nephritis. He has been successful in some cases with subcutaneous injections of peptone. Calcium chlorid should also be tried. If it does no good, at least it does no harm. To act on the renal hemorrhage, tannin, ergot and krameria have been tried but without much benefit. The main reliance is on dietetic measures, milk for a short time, then milk and vegetables, with a small amount of mutton or ham. Salt need not be discarded unless there is retention, but not much should be allowed as it may increase the hematuria. The child should be kept in bed a long time. Getting up may bring a wave of purpura and increase the albuminuria. Marini's patient eliminated 5.55 gm. of albumin in ten hours reclining, and 15.6 gm. when she got up. Careful treatment may ward off complications but it does not modify the course materially.

Journal de Chirurgie, Paris

September, 1919, **15**, No. 3

*Cancer of the Tongue. H. Morestin.—p. 221.
Technic for Gastro-Enterostomy. R. Toupet.—p. 253.

Radical Operation for Cancer of the Tongue.—Morestin emphasizes that the key to success in operating on a cancer of the tongue is the removal of the glands. This is more important here than with cancer elsewhere, and the mutilation has to be extensive even for a small neoplasm on one edge of the tongue. The entire tongue must be sacrificed if the lesion straddles the middle. His fifty-page article has fourteen illustrations showing the preferable technic. The incision in the neck has three straight branches of nearly equal lengh, one vertical, one running to just below the tip of the chin, and one to just below the lobe of the ear. The portion removed should comprise, he reiterates, the entire half of the tongue, the mucosa of the floor of the mouth on that side (sublingual region and glossomaxillary groove), the sublingual glands, the mylohyoid muscle, the anterior belly of the digastric, the submaxillary gland, and the median suprahyoid glands, along with the submaxillary anterior lymph glands and the entire retrojugular chain, and they must all come away in a single block, the lymph glands still surrounded with their cellular atmosphere. Two of the illustrations show the mass thus excised; in one it included the lymph glands also on the opposite side as the neoplasm had crossed the middle of the tongue. The patient is fed afterward through a retention catheter passed through the nose in the course of the operation, before tamponing or suturing. There is every advantage in getting the patient out of bed early, immediately if possible after he has been thoroughly warmed and rested. If the two first days pass without mishap, the clinical cure is practically certain. The operative mortality of cancer of the tongue is still 20 or 25 per cent. but he knows of cases free from recurrence for one, two, five and even ten years. The functional disturbance from loss of the tongue is much less than might be anticipated; mastication suffers most.

Lyon Chirurgical

March-April, 1919, **16**, No. 2

*Chronic Intestinal Stasis. Victor Pauchet.—p. 135.
Ankylosis of Ribs after Trauma. L. Bérard and Dunet.—p. 147.
*Traumatic Pulmonary Tuberculosis. V. Cordier.—p. 153.
*Reflex Action from the Pleura. R. Montaz.—p. 159.
Nine Cases of Aneurysm. L. Desgouttes.—p. 164.
*Parotitis after Typhus and Relapsing Fever. P. Bonnet and S. de Nabias.—p. 172.
*Indirect Operative Treatment of Fistula of Parotid Gland. R. Olivier. —p. 204.
*Flail Elbow. R. Massart.—p. 207.

Chronic Intestinal Stasis.—Pauchet always examines for kinks and bands at every laparotomy, and corrects anything of the kind he discovers, reducing the size of the dilated bowel and suspending sagging loops. In cases in which it proved necessary to short-circuit the bowel or resect more or less of it, he had 2 fatalities in the 60 in which he joined the ileum to the sigmoid flexure; 3 fatalities in 19 total colectomies, and one in the 36 hemicolectomies, but none died in the 11 colectomy cases in which the operation was done in two sittings. He remarks that this latter method and simple ileosigmoidostomy are comparatively harmless interventions. Extreme care is necessary after the operation to ensure proper diet, massage, physical culture and psychotherapy. The cure or the improvement become apparent only very slowly, as it takes time for the effects of the chronic intoxication to wear off and the patient to regain poise.

Traumatic Pulmonary Tuberculosis.—Cordier is disinclined to accept the possibility of a traumatic origin for pulmonary tuberculosis, as sclerosis such as forms after traumatism is Nature's method of curing tuberculosis and, still more, preventing its development. A foreign body in the lungs starts formation of sclerosis, so that there is no sense, he says, in removing a foreign body solely from fear of tuberculosis settling in the lesion. Devic reported in 1917 a case of a man wounded in the lung many years before, who died finally from pulmonary tuberculosis but necropsy showed that the tuberculosis had invaded all of the lungs except the track of the projectile so long before.

Syncopal Attacks from Irritation of the Pleura.—Montaz warns that when localized irritation of the pleura keeps up and induces recurring syncopes, nothing but removal of the irritating factor will put an end to the disturbances. He reports a case in a young man with a scrap of shell impinging on the pleural cavity. He presented all the symptoms of internal hemorrhage although there had been scarcely any bleeding. At each respiratory excursion the lung bumped against the sharp edge of the metal, and the syncopal attacks proved fatal in less than twelve hours from the injury. When the thorax was opened, the projectile did not seem to be in a dangerous point and it was left unmolested, the syncopal attacks being regarded as contraindicating further search. Pierry has reported a similar case of sudden death from pleural reflex action, the pleura being irritated from a fractured rib. Evidently there are certain zones in the pleura which are particularly sensitive to irritation, and this is liable to induce shock. Morphin in large doses is best to attenuate this reflex action.

Parotitis Consecutive to Typhus and Relapsing Fever.—Bonnet and de Nabias give the clinical histories of 38 cases in which extreme swelling and pain in one or both parotid glands had followed typhus or relapsing fever at a French surgical hospital in Roumania in 1917. The parotitis seemed to be more common after typhus, and gangrene from arteritis after relapsing fever, but these complications occurred in some of both. The number of cases was very large, but the 38 reported were the only ones of which careful notes were kept. Parotitis used to be considered a feature of typhus, as much as the bubo in plague, but we know now that it is due to secondary infection, the streptococcus predominating. All but 2 of the 38 cases progressed to suppuration; the 2 exceptions were in relapsing fever cases. In another case the bilateral parotitis was accompanied by gangrene of the foot. Seven of the 38 cases terminated fatally, all in the relapsing fever group. Erysipelas of the face was frequently a further complication. Rinsing out the mouth every three hours with iodized water did not seem to ward off the parotitis, but the parotid did not suppurate in the cases in which this was done in typhus and relapsing fever. They add that if the patients could have been fed properly during the disease and the secretion of saliva thus kept up, there would have been less chance for the parotitis to develop. There were some days in February and March when there was absolutely no firewood, bread or tea, and an onion was all the food available for the whole day for each patient. They incised the parotid gland from the back, starting from the mastoid and turning the angle of the jaw a fingerbreadth below. This incision respects the facial nerve, is less disfiguring, and heals better than in the stretched tissues over the parotid.

Nerve Resection to Cure Fistula in the Parotid Gland.—Olivier adds three new cases to the list of those in which a long rebellious salivary fistula into the parotid gland healed spontaneously and promptly after the auriculotemporal nerve had been resected and the central stump seized with forceps and torn off by rolling it up gently on the forceps. He located the nerve by tracing its branches back. In one of the cases the operation was done to ward off impending fistula, after removal of an aberrant and enlarged parotid gland.

Flail Elbow Joint.—Massart describes the principles that should be followed in correction of loose elbow, and reports with illustrations some typical cases. Surgical measures are giving good results with ankylosis or neo-arthrosis according to the indications.

Paris Médical

Sept. 20, 1919, **9**, No. 38

*Syphilis in Joints. Lacapère and C. Laurent.—p. 221.
*Migration of Projectiles in the Abdomen. Barthélemy.—p. 234.
*Bacteriology of Tuberculous Cold Abscesses. A. Demolon.—p. 234.

Syphilitic Processes in Joints.—Lacapère and Laurent relate that in 1,200 syphilitics examined at the Dispensaire

antisyphilitique at Fez, Morocco, no case of involvement of a joint was noted among 178 syphilitic Europeans, while there were specific joint lesions in 112 of 979 Mohammedans. Fully 75 per cent. of the native population are syphilitic, and the joints are affected in about 10 per cent. The joint lesions are more common among Arabs from the rural districts than in the city, and the percentage of joint cases jumps from below 10 to over 28 in the colder months of the year. They think that malaria is another predisposing factor. They give illustrated descriptions of a number of cases of different types, affecting the knee, the elbow, the shoulder, some with fistulas, some entailing ankylosis. In some the joint lesions were the work of inherited syphilis. They emphasize in particular the cases of ankylosis from "syphilitic rheumatism." The Arabs pay no heed to lesions of any kind unless they become quite painful, so this articular syphilis is allowed to progress to an advanced stage before medical aid is sought.

Migration of Projectiles in the Abdomen.—In one of the two cases reported the bullet was found on repeated examination in the left hypochondrium, 3 cm. from the median line and 2 cm. in front of the spine. The day after the last roentgen examination an incision at this point failed to reveal the bullet, and it was found embedded in the ascending mesocolon close to the cecum. In the other case the projectile was seen 3 cm. deep and 3 cm. to the left of the entering point, 2 cm. below the umbilicus. It was found three days later in the exact center of the peritoneal cavity.

Bacteriology of Tuberculous Abscess.—Demolon found inoculation of guinea-pigs the most reliable means to determine the bacillary nature of a cold abscess, as he shows by three typical case reports. The inoculations may prove positive up to the very last traces of the healing abscess. It is evident therefore that the healing of these abscesses is due to some clinical process other than sterilization. Under vigorous disinfectants the pus may give negative findings for a time, but as soon as the disinfectant is stopped, the bacilli may reappear from their lurking places in the deeper tissues. During the entire course of treatment, even with camphorated naphthol, the bacilli seemed to retain the same virulence, judging from the action on the inoculated animals.

Presse Médicale, Paris

Sept. 25, 1919, **27**, No. 54

*Nervous Complications of Typhus. D. E. Paulian.—p. 541.
Comparative Study of the Reaction of Fixation in Tuberculosis with the Calmette and Massol Antigens. L. Boez and E. Duhot.—p. 543.
Arsenic in Treatment of Gangrene of the Lung. M. Perrin.—p. 546.
Recent Acquisitions in Typhus. A. L. Fourcade.—p. 548.

Nervous Complications of Typhus.—Paulian has had extensive experience with typhus on the Russo-Roumanian front, and he emphasizes that the lumbar fluid invariably shows a lymphocyte reaction in typhus. Whatever the form of the disease, the nervous system is affected from the beginning. There is a meningeal reaction constantly during the course of the disease, and it may persist long afterward, for a year or more. There may be complications in the nervous system, symptoms showing involvement of the brain, pons, cerebellum, spinal cord, and mental impairment, neuritis or polyneuritis, or there may be various complications, functional or showing involvement of different organs or glands.

Oct. 4, 1919, **27**, No. 56

*Tremor. L. Binet.—p. 561.
*Primary Perinephritic Phlegmon. A. Bergeret.—p. 563.
*Puncture and Induced Pneumothorax in Treatment of Serofibrinous Pleurisy. G. L. Regard.—p. 564.
*Staining the Cilia of Bacteria. E. Lancereaux.—p. 565.
*The Physical Reactions to Aviation. L. Binet.—p. 566.

Devices for Study of Tremor.—Binet gives illustrations of various devices for recording the special features of the tremor in different diseases. They allow analysis of the special type of the tremor and its variation under fatigue, emotions, medication, and operative treatment. For instance, if the hand is held horizontal in front of a mirror, and a photograph is taken of the reflection in the mirror, the difference between horizontal and vertical tremor is very apparent, as he shows by two such photographs.

Primary Paranephritic Phlegmon.—Bergeret emphasises that the alleged primary phlegmon is in reality always secondary to some infectious process elsewhere. The contraction of the muscles and intense pain in the costovertebral angle on deep pressure at the top of the angle formed by the twelfth rib with the sacrolumbar mass are instructive and may permit an early diagnosis, especially if there is unilateral bacteriuria, or the kidney on that side shows reduced functional capacity. By comparing the costovertebral angle on both sides, the rigidity of the wall over the phlegmon is very apparent. The onset of the phlegmon is usually insidious, but it is extremely important to discover and evacuate it to ward off serious complications.

Treatment of Pleurisy.—Regard evacuates the effusion and replaces it with filtered air. Weil has reported successful application in fifty cases of this *pneumosérеuse thérapeutique*, and Regard's own experience has confirmed the advantages of this technic. It ensures complete repose for both the pleura and the lung, while the separation of the two sheets of the pleura prevents irritation and production of adhesions. The normal balance of the heart, diaphragm, etc., is restored; the heart is relieved, and pain from friction and inflammation is warded off. Some of his patients with 2 liters of effusion after two or three weeks of the pleurisy were cured so promptly that they returned to work in fifteen or twenty days, even those who required a second puncture.

Staining Technic for the Cilia of Micro-Organisms.—Lancereaux describes a simple modification of the Zettnow and van Ermenghen technics which shows up the cilia of bacteria.

Influence of Aviation on the Organism.—Binet analyzes twenty-five recent works on the medical aspect of aviation, and lists the reactions observed in aviators during and after their flights.

Oct. 8, 1919, **27**, No. 57

*Lumbar Puncture in Syphilis. P. Ravaut.—p. 573.
*Reconstruction of the Esophagus. Guisez.—p. 575.

When to Test the Spinal Fluid in Syphilis.—Ravaut expatiates on the importance of lumbar puncture, both for diagnosis and in treatment of syphilis of the nervous system, when it is done at the right moment. At other times it is not instructive and has no therapeutic value, and is an unnecessary infliction on the patient. He has made a special study of lumbar puncture in syphilis since 1902, and soon discovered that long before there are clinical manifestations of nervous syphilis, the meninges and vessels are being gradually injured by the spirochetes. When symptoms from this become evident, the destruction has gone too far for recuperation to be possible. In detecting the latent "meningovascularitis" which precedes and engenders most of the nerve processes of syphilis, lumbar puncture is most instructive and helpful. This meningovascularitis is liable to develop at any stage, early or late, of the syphilis. He charts the findings in 1,000 syphilitics classified according as they presented symptoms of nervous syphilis or not. They show that during the first three years, reactions of septicemic origin are common. The reactions which persist after the third year in all probability are traceable to changes in the central nervous system, although as yet they may not have given a clinical hint of their existence. Between the beginning of the fourth year and the tenth year is the period of the maximum frequency of the occurrence of reactions in the cerebrospinal fluid testifying to a latent phase of meningovascularitis. At any stage of the syphilis, lumbar puncture will reveal the organic or neuropathic nature of nervous symptoms and the intensity of the meningitis. If there are no nervous symptoms, he advises puncture as a routine procedure at the fourth year, and would defer the puncture to this date, as a rule. After the tenth year, over 75 per cent. of those with a positive reaction in the fluid have also unmistakable clinical nervous symptoms When a patient without known syphilis presents puzzling nervous disturbances, lumbar puncture may clear up the case when otherwise quite different causes might be incriminated. A distinctly positive reaction with syphilis known to be a factor indicates active meningitis, and this calls for treatment as long as the reac-

tion persists positive, which may take years. In several cases in his experience, notwithstanding persevering treatment, symptoms indicating grave lesions finally developed. Latent meningitis is less and less frequent after the fourth year. In conclusion Ravaut warns that certain slight syphilitic processes may run their course at points in brain or elsewhere without inducing meningitis. These must be excluded before drawing the prognosis from the normal cerebrospinal fluid.

Reconstruction of the Esophagus.—Guisez gives an illustrated description of the comparatively simple technic with which he reconstructed the missing upper three-fourths of the cervical portion of the esophagus in a woman of 66. The gap was 6 cm. long, and the woman was being fed through it. The portion above seemed to form a blind pouch, and swallowing movements were thus impossible as these have to start in the pharynx. This passage was made permeable, and at a second sitting a tube formed from skin was introduced into the esophagus and sutured to the stump above and below, the skin side inside the tube.

Progrès Médical, Paris

Aug. 30, 1919, **34**, No. 35

*Pancreas Extract in Gastric Cancer. M. Loeper.—p. 341.
Pleuropulmonary Tuberculosis in Children and Adolescents. L. Ribadeau-Dumas.—p. 342.
*Fixation of Movable Kidney. Uteau.—p. 346.

Pancreatic Extract in Gastric Cancer.—Loeper has been giving intravenous injections of pancreatic extract in treatment of gastric cancer, and he here reports five out of the larger number of cases in which this has been done, discussing the theoretical bases for it. The results show that this treatment has a decidedly favorable action on certain of the symptoms from gastric cancer—"I do not say on the cancer itself." The weight increased in all, the number of erythrocytes increased and the antitryptic index showed higher values in two of the four patients tested. In the cancerous it acts the same as in healthy subjects and in dogs, increasing the antiproteolytic power of the blood serum and the resisting power of the blood corpuscles. The general condition improves, and the resisting power of the organism is enhanced, including the special defensive reactions against the cancer products.

When Should a Movable Kidney Be Fastened in Place?—Uteau remarks that a movable kidney may induce disturbances of three kinds, pain, dyspepsia or nervous instability, or all combined. With pain and dyspepsia accompanying a movable kidney, he keeps the patient in bed for several days. If the symptoms show marked relief, the kidney may well be incriminated as the cause of the disturbances, as also when there is retention of a few grams of urine in the kidney pelvis, found on catheterization of the ureter. On the other hand, he advises against any attempt at fixation when the displacement of the kidney forms part of a general tendency to ptosis. In this latter case, general gymnastic exercises and hydrotherapy to strengthen and tone up the abdominal wall are indicated, resting the sagging abdominal wall by frequent reclining. This will give these patients a living abdominal band which is better than all artificial measures. A strong and elastic abdominal wall is one of the best means for restoring a sagging kidney to place. The wearing of an abdominal band may also usefully supplement this. A course of treatment for the nervous instability may prove helpful in curing the subjective symptoms with movable kidney. In case an operation is considered, a neurologist should be consulted beforehand with nervous subjects and, still more imperatively, with insane subjects. Uteau warns to leave "silent movable kidneys" alone, and to operate only when the connection between the symptoms and the movable organ is definitely determined. The benefit from the fixation may be months in appearing.

Sept. 6, 1919, **34**, No. 36

*Genital Sequelae in the Gassed. A. Clerc, and others.—p. 351.
*Functional Impotence and Reflex Contracture. A. Barbé.—p. 352.
*Tuberculous Membranous Cast of Bronchus. P. Meurisse.—p. 354.

Genital Sequelae in the Gassed.—The injuries of the external genitals from gassing healed promptly in all but nine of the 108 soldiers presenting these lesions among the 441 *ypérités* at the special service for the gassed in charge of Achard. The nine exceptional cases are described and the medicolegal importance emphasized.

Functional Impotence and Reflex Contracture.—Barbé insists on the frequently unsuspected, remote cause for functional impotency and reflex contracture, describing several typical cases. In one the impotency of the arm was finally traced to nutritional disturbance from overtight dressings after a comparatively slight wound of the hand. The edema and paralysis of the arm were unmistakably due to an organic lesion. He warns that negative electric tests do not exclude organic mischief. Reflex contracture may occur from irritation of muscles from some bone lesion. This is particularly liable to occur after fracture of metacarpal bones. The lesions of muscles or tendons have more to do with the contracture than the primary bone lesion. The vessels and the nerve fibers may also be involved. The contracture perhaps interfering with the nourishment of the parts may set up a vicious circle.

Tuberculous Membranous Cast of Bronchus.—In the case described by Meurisse the man of 37 seemed to have been cured of pulmonary tuberculosis. He had had hemoptysis on two occasions, the last three years before and the hemoptysis had not been severe. Recently he expelled a membranous cast of a bronchus without effort or dyspnea. It was about 13 mm. long by 3 mm. in diameter, white, and rather firm, but easily shredded with a needle, and containing very large numbers of tubercle bacilli.

Correspondenz-Blatt für Schweizer Aerzte, Basel

Sept. 18, 1919, **49**, No. 38

*Regional Gastrospasm with Cholelithiasis. M. Lüdin.—p. 1417.
*Comparative Study of Test Meals in Gastro-Intestinal Pathology. H. C. Frenkel-Tissot.—p. 1423.

Regional Gastrospasm with Cholelithiasis.—Lüdin explains that it is extremely difficult sometimes to distinguish between spasmodic constriction of the stomach just above the pylorus and cancer in this region. Even repeated radioscopy may happen to catch the spasm each time. Administration of sedatives to abolish the spasm does not always answer the purpose. Consequently only an exploratory incision will reveal the true condition in some cases. This may allow correction of the cause inducing the gastrospasm, as in two cases described in which the laparotomy disclosed pathologic conditions in the gallbladder, with stones, all previously unsuspected. Cholecystectomy put an end to all the disturbances, including the gastrospasm.

Test Meals.—Frenkel-Tissot analyzes experiences with the ordinary test meals at the Virchow Hospital in Berlin. Each of the 250 subjects had the stomach contents aspirated usually seven or eight times in the course of several days—a total of 2,000 readings. The aim of the special research was to determine the length of time the test meal remained in the stomach according to local conditions, with ulcer, cancer, etc., and in the normal stomach. A series of standards for the characteristic evacuation of the stomach in these various conditions was thus obtained, and he expatiates on the important information to be derived from this hitherto comparatively neglected test of the motor functioning.

Among the points emphasized are the peculiarly instructive findings when test meals of different types, with and without "ballast," are used in the case. In 18 per cent. of the cases he found that organic stenosis of the pylorus was responsible for the twelve hour retention of the test supper (200 gm. rice and 30 gm. raisins or dried currants). The amount of the retention is no guide to the malignancy or not of the pathologic process. Twelve hour retention was never found with gastric neuroses, gastroptosis or gastritis. He found occult blood in the stools only in 63 per cent. of the certain cases of cancer, while it was evident in other cases in which necropsy failed to reveal a trace of cancer. Occult blood has been found with mere pancreas and gallbladder disease, polyps, diverticuli, and varices in the intestines. His experience shows further that small or microretention has

no significance from the standpoint of etiology; that persisting retention of the Kemp or Leube-Riegel test meal for seven to ten hours with gastritis is suspicious of cancer, but it may fall within the frame of simple gastritis.

Twelve hour retention with achylia points very emphatically to malignant disease. It is extremely rare under other conditions. It is possible, however, for cancer with total achylia to progress for months without retention; in two such cases the inoperable tumor lay along the lesser curvature to the esophagus. These patients had absolutely no disturbance in the evacuation of the stomach and no pains, and they had applied for treatment merely on account of their weakness. Hyperchlorhydria was evident with ulcer in only 48.5 per cent. of the ulcer cases, and retention in only 45.7 per cent. of the uncomplicated cases, and this only for seven hours With actual stenosis, the test supper and the Kemp meal are equally instructive. With duodenal ulcer, the fasting stomach was always found empty, as also with reflex gastric secretory anomalies from lead poisoning, pancreas, gallbladder and bowel disease.

Sept. 25, 1919, **40**, No. 39

*Radiotherapy at Zurich Gynecologic Clinic. G. v. Mandach.—p. 1449.
*Diaphragmatic Hernia. G. Ichok.—p. 1457.
*Congenital Cartilaginous Exostoses. H. Jaeger.—p. 1461.
Attitude of Children in School. W. Loewenthal.—p. 1464.
*Surgical Disease of the Biliary Passages. C. Krähenbühl.—p. 1466.
Postinfluenzal Psychoses. V. Demole.—p. 1468.
*Goiter and Iodin in the School. Weith.—p. 1474.

Radiotherapy at Gynecologic Clinic.—Von Mandach reports satisfactory results from roentgen treatment in almost every case of preclimacteric and climacteric hemorrhages and of myoma. In 45 cases of the former the hemorrhages were completely arrested in all but 4, and they had become insignificant in 3 in this group. The treatment failed completely in only one case. In 168 cases of myoma all were relieved from their hemorrhages but 5, but the myomas persisted unmodified. He agrees with those who think that the time has not yet come for relying on raying alone in all cases of malignant disease, but he is convinced that postoperative raying has great promise, although this technic has been introduced too recently for a final decision on it as yet. In 4 cases of carcinoma of the body of the uterus and 6 of the cervix, treated by operation and raying in 1914 and 1915, all the women have kept in good health since. Among the 2 cervix cases was a woman of 24 and another of 40 with a cancerous nodule in the labium minus.

Diaphragmatic Eventration.—Ichok applies this term to the condition when the thin and relaxed diaphragm allows the abdominal organs to slide into the thorax, but without any actual breach in the diaphragm. A case in a woman of 44 is described.

Congenital Cartilaginous Exostoses.—The remarkable feature of the new-born child reported by Jaeger was that some of the multiple cartilaginous exostoses of the ribs showed a distinct hinge or joint connection which allowed free play of movements in a horizontal direction. The only plausible explanation for this articulation formation, he thinks, is the assumption of movements of the fetal thorax analogous to the breathing movements after birth. Ahlfeld called attention in 1905 to rhythmical wavelike movements of the fetal thorax, as has been mentioned in THE JOURNAL. He said they could be easily seen and palpated during the last months of pregnancy, and this has been repeatedly confirmed by others. The joint production in the congenital rib exostoses in the case here described is still further corroboration.

Surgical Disease of the Biliary Passages.—Krähenbühl refers to Courvoisier's law that when the common bile duct is obstructed by a gallstone there is no distention of the gallbladder as this is already pathologically shriveled. With obstruction of the common bile duct from without, the gallbladder is not pathologic in the same way, and it soon becomes distended. When this distention has lasted a long time, cancer obstructing the biliary passages is usually the cause. In an experience with 41 operative cases of cancer of the gallbladder, this law applied in 34 cases and in 4 obesity prevented investigation. In only 3 cases the law did not apply. Gallstones were found in 87.8 per cent. of these cancer cases. In 4 of the other cases no search was made for gallstones, and in still another, gallstones had been previously passed in the stools. In 37 of the 41 cases there was a history of gallstone colics long before the cancer. The larger proportion of gallstone cases which come to operation nowadays and thus ensure the removal of the gallstone irritant cause for cancer production, explains the progressive reduction in the number of cancer cases. The proportion in the last three decades dropped from 12.1 to 5.9 per cent. of the total 498 operative gallstone cases.

Goiter and Iodin in the School.—Weith relates that large mouthed bottles containing 20 gm. of 10 per cent. tincture of iodin were placed in all the school rooms of several of the school buildings at Lausanne. Examination of the children after two months of this showed only 495 with goiter when there had been 651 to start with, and more than 50 per cent. showed marked retrogression. This reduction of 13 per cent. does not compare favorably with Marine's 33 per cent. in the Akron schools, but Weith relates that in the school buildings at Lausanne in which no attempt at the iodin treatment had been made, the proportion of children with goiter had increased during this same period from 22.86 and 36.72 per cent. to 28.72 and 57.77, and in one of the schools the percentage among the girls had doubled (from 22.85 to 45.18). The contents of the bottles disappeared in the course of thirty days, that is, 2 gm. of metallic iodin passed into the air of the room, about 7 cg. daily, and were distributed among thirty to forty scholars. He thinks that iodin crystals might work still better, and that twice the dose might be preferable. This "iodation" of the school rooms has a number of obvious advantages over administration of iodin by other means, and is, he declares, the true public prophylaxis, automatic and effectual.

Annali d'Igiene, Rome

June, 1919, **29**, No. 6

Co-Agglutinins in Immune Serums. C. Sarti.—p. 349.
*Radiotherapy of Chronic Malaria. Antonino Pais.—p. 359.
Compulsory Notification of Tuberculosis. V. Puntoni.—p. 366.

Radiotherapy in Malaria.—Pais has been conducting research for some time on the way in which the chills and fever in chronic and rebellious malaria are influenced by raying. He bases this treatment on the assumption that minute doses of radiant energy stimulate the vital functioning of the cell, instead of having the destructive action of the large doses. The minute doses attenuate the gravity of the disease and sometimes abort the paroxysms of fever, and may cure the disease in its chronic form, refractory to or even without the aid of quinin. There is a great difference in the response in different forms of malaria and at different stages of the paroxysm. The results of his 3,000 experiences have convinced him that this is a practical and effectual method of treating cases in which ordinary measures have failed. He applies the rays diffusely to the spleen through an aluminum filter. The hematozoa disappear from the blood after repeated mild exposures. The number of erythrocytes increases. In one case, from 2,300,000 it ran up to 3,100,000 on the fifteenth day and there was no further fever after the second exposure. Usually the improvement in the blood picture is much more gradual. Pais reiterates that with the small doses he advocates, from 1 to 10 or 12 units, even the largest spleens yield to the action of the roentgen rays if applied in very small doses at long intervals. Too large doses and too short intervals cause the spleen to increase in size again. As the patients witness the subsidence of their spleen tumor and the disappearance of the pains and discomfort from it, they return with enthusiasm for further exposures.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 14, 1919, **40**, No. 74

*Prophylaxis of Tetanus in Civilian Population. G. Zanetti.—p. 784.

Prophylaxis of Tetanus in Civilians.—Zanetti discusses in particular the prophylaxis of tetanus in agricultural workers, especially from the standpoint of insurance against acci-

dents. He remarks that the lessons learned from the war in regard to the efficacy of antitetanus serotherapy should be applied to ward off tetanus in persons working on farms, etc. Italy has made compulsory insurance against accidents to workers in industries and on farms, and he pleads that antiserum should be made available for all such accidents. The large supplies of antitetanus serum now left on hand from the war should be sold at cost to the communities throughout the country so that effectual prophylaxis would be available everywhere.

Policlinico, Rome

July, 1919, **26**, Surgical Section, No. 7

*Bone Cysts. B. Poletini.—p. 217. Conc'n.
*Experimental Ligation of the Ureter. A. Pignatti.—p. 231.
*Gluteal Hernia. G. Marchetti.—p. 244.

Solitary Bone Cysts.—In two of the three cases reported with minute detail by Polettini, the femur was the site of the cyst in children of 8 and 9. In the third case, in a young man, the cyst was evidently of sarcomatous origin. In all three the clinical course, the symptoms, and the contents of the cyst were alike, and only histologic examination revealed the sarcomatous origin in the third case. The course was rapid and scarcely painful in all, the lesion was restricted to a single segment of the bone, and there was no involvement of glands. The cyst contents looked like blood and the cure was rapid and complete in all after the bone cavity had been scraped out. It filled up rapidly with new forming tissue. Notwithstanding the similarity in the course and findings, these three cases testify to the fundamental difference in the pathogenesis in different cases. A list of sixty-eight articles on bone cysts is appended.

Experimental Ligation of Ureter Plus Nephrotomy.—Pignatti ligated the ureter in a number of rabbits and then incised or decapsulated the kidney. When nephrotomy alone was done, the development of hydronephrosis was retarded, but when the kidney was decapsulated no tendency to hydronephrosis became apparent at any time, and there was no destruction of kidney tissue. The practical conclusions from this research are that when the ureter becomes obstructed from any cause, prompt nephrotomy with decapsulation might ward off destructive processes in the kidney parenchyma and thus do away with the necessity for nephrectomy later. The benefit is probably due to collateral circulation developing through the nephrotomy cicatrix and connecting with the intrarenal circulation.

Ischiatic Hernia.—Marchetti has been able to find records of only thirty cases of hernia in the ischiatic or gluteal region, and describes a case personally observed in which the hernia was formed of a large diverticulum in the sigmoid.

Rivista di Clinica Pediatrica, Florence

August, 1919, **17**, No. 8

*Autovaccine Therapy of Skin Disease in Children. G. Guidi.—p. 393.
Mercuriale's Pioneer Work in Pediatrics. A. Spallicci.—p. 411.

Autovaccine Therapy of Pyodermatitis in Young Children.—Guidi reviews the history of autogenous vaccines and describes considerable experience with them at the children's clinic at Florence in the last three years. The microorganism usually responsible is *Staphylococcus pyogenes-aureus;* the vaccine treatment was limited to the exceptionally severe and rebellious cases. In the twelve typical cases described, the progressive spread of the skin disease was arrested and the defensive forces reenforced. Most of the twelve children whose case histories are related were infants under 2 years old. One 6 months infant had furunculosis, small abscesses over its body and confluent on the scalp. No local measures had seemed to do any good during two months of treatment, but under six injections of the autovaccine the skin cleared up. The last to heal was a vast ulceration on the scalp.

September, 1919, **17**, No. 9

*Cirrhosis of Liver in Boy. Pietro Busacchi.—p. 449.
*Bean in Infant's Bronchus. Virgilio Craglietto.—p. 477.

Cirrhosis of Liver in Child.—In the boy of 10 whose case is described with comment by Busacchi, the kidneys and the cardiovascular system seemed to be normal, and the only plausible explanation of the anasarca seemed to be the assumption of cirrhosis of the liver. This was confirmed by the metabolic findings and the improvement under treatment addressed to the liver. The latter organ must have been constitutionally inferior as to this might be ascribed the convulsions at the age of 18 months, and it may have been a factor in the inflammatory gastro-intestinal process from which the child had repeatedly suffered. The child died from intercurrent influenza about three years after the first symptoms. The child's brother has a much enlarged liver, but the Wassermann test was negative in both.

Bean in Bronchus.—The 14 months infant had repeated attacks of suffocation with loss of consciousness, with apparently normal intervals. Low tracheotomy at the third hour permitted the removal of the foreign body after two vain attempts, the bean being repeatedly drawn in deep again with the breath just as it was being fished out through the opening in the trachea.

Archivos Españoles de Pediatría, Madrid

August, 1919, **3**, No. 8

*Bladder Stones in Children. E. Suñer Ordoñez.—p. 449.
*Case of Rat-Bite Fever in Spain. P. Escolano Sabater.—p. 456.

Bladder Stones in Children.—Suñer relates that in two of the forty cases in children which he has encountered at Valladolid, the stone was expelled spontaneously as the operation was contemplated. It measured 15 mm. by 2 cm. in one girl of 8 but it traversed the urethra apparently without damaging it. In the other girl of 12 the presence of the stone in the bladder was determined beyond question but when the bladder was opened four days later nothing was found, the stone having evidently been expelled in the interim without the patient's or the attendants' knowledge. The child died from shock six days later, the necropsy findings entirely negative. Since this occurrence he never operates without verifying the diagnosis anew just before the intervention, and he is particularly wary in the cases of calculi in girls. In another case the manipulations of the operation had dislodged the calculus in the bladder and it had slipped into the urethra. In still another case the calculus blocked the outlet of the bladder intermittently and the boy of 7 was almost moribund from uremia. The convulsions did not yield to chloral or hot baths, but they were arrested by withdrawal of 120 gm. of blood. This was the only case of uremic accidents in his forty cases in children, but it shows the possibility of sudden and grave disturbance from this cause. In the case reported the further history demonstrated that the kidneys were sound. In one boy of 4 a small calculus had perforated the lower urethra and the urine had collected in the region, with mortification of the skin from the distention. There had been nothing to suggest a tendency to lithiasis before, and the good general health and clear urine testified that it was merely a local process. Suñer confirmed in this case the statements of others in regard to the injury from a retention catheter in such a case; it seems to act like an irritating foreign body.

Rat-Bite Fever.—Escolano reports the case of an infant of nearly 2 who was lying in a low cradle on the ground floor when its mother was summoned by the child's sudden screaming, and she found blood on the cheeks and brow and a small wound in the brow. Fifteen days later typical rat-bite fever developed, with chills, hard swollen glands at the angle of the jaws, and eruption and swelling of the face, but the child took the breast normally and the bowel functions seemed normal. The symptoms lasted two days and then subsided, but eight days thereafter they returned in all their former intensity, and the edema of the face was accompanied with patches of redness, almost violet at certain points. This eruption erythem did not itch and it disappeared under pressure, but the doughy edema was tender. These attacks of fever, chills and prostration returned again and again with approximately normal intervals of one or two weeks. Frugoni has known them to recur during years, but recovery is generally complete in from two to five months. A colored photograph of the child in the case

here reported shows the peculiar localization of the eruption. A second photograph after recovery shows the child apparently normal after a little more than three months of these paroxysms of fever of the relapsing type. Two guinea-pigs were injected subcutaneously with 1 c.c. of the child's blood, and one died the same day the child had its next paroxysm. The other developed paroxysms of fever of the relapsing type analogous to what is observed in man. In both, necropsy showed intense congestion of lungs, liver and kidneys. The child was given a preparation of arsenic and the changes in the blood thereafter confirmed the clinical turn for the better.

Vida Nueva, Havana

August, 1919, **11**, No. 8

*Eye Sign in Mastoiditis. A. Frias Oñate.—p. 172.
Influenzal Purulent Pleurisy. J. Cesar Pineda.—p. 173.
Tropism and Capillary Attraction. A. and A. Mary.—p. 188.

Eye Sign in Mastoiditis.—Frias Oñate comments on the importance of hyperemia of the papilla as a sign of cerebral complications during mastoiditis. It is particularly instructive when the mastoid process is deceptively free from symptoms. Even with a pronounced clinical picture of mastoiditis, the involvement of the brain may escape notice unless the fundus of the eye is examined as a routine measure. Hyperemia of the papilla calls for an immediate operation without wasting time on ice bags, etc. Craniotomy followed by the mastoid operation will save many otherwise doomed patients. In two recent cases this eye sign gave the clue that led to a prompt cure after trephining had confirmed the extradural abscess. In one of these cases this eye sign was all that differentiated the process from the assumed otogenous meningitis. Politzer used to teach that before doing a mastoid operation on a patient one should have done the operation fifty times on cadavers, but this, Frias declares, is exaggerated. He had never practiced the operation on a cadaver when he successfully performed the operation on a patient.

September, 1919, **11**, No. 9

Spread of the Pandemic of Influenza. R. Rodriguez Méndez.—p. 193.
Arsphenamin in Psoriasis. J. Cesar Pineda.—p. 197.
*Cervical Ribs. Israel Castellanos.—p. 199.

Cervical Ribs.—Castellanos remarks that some of the collaborators of THE JOURNAL, who write historical reviews, are not always accurate in their transcription of medical literature. "In one of the first numbers of THE JOURNAL [Spanish edition] the law of Le Double was announced but without crediting it to its originator, the learned anatomist of Tours." "It was claimed by the North American author whose name was signed to the article, as his own harvest. And now A. Church in 'Neurology of Cervical Ribs' has omitted or forgotten certain facts to which I think attention should be called. To begin with, he comments on the scant references to cervical ribs in the writings of neurologists, and he specifies only two that mention them." Castellanos proceeds to call attention to a large number of articles in this line published by neurologists, and he mentions among others Schiassi, P. Marie, Marburg and Crouzon. He continues, "Church ascribes the first description to Hunauld (spelling his name wrong) in 1740 and to Gruber in 1869, but between them more than ten other writers had published observations, and Gruber's first article antedated by twenty years the monograph cited by Church." Castellanos also takes exception to Church's statement that Streissler's monograph (1913) is the best work on cervical ribs, being based on compilation of 200 cases. "Church seems to have overlooked Le Double's monumental work of 543 pages (1912) on the variations of the spine in man. . . . Almost all the authors cited by Church are Anglo-Saxons. The literature of the Latin races is completely forgotten. We do not care to comment on this, but merely call it to the attention of those of us who write in Spanish, and, especially, of those who are fond of citing authors who never read or appreciate our writings. If they do not take the pains to explore the medical bibliography of the Latin races in Europe, much less will they be inclined to examine Latin-American literature. If Church had done this, he could not have failed to find several publications on his subject. To mention only the latest, he would have seen Pelfort's report on two cases of cervical ribs (1918) in which he described the nervous disturbances as the most common and those of which the subjects complain first. These consist in neuralgic pains in the neck, spreading to the head, thorax and arm, usually in the region innervated by the ulnar nerve. The sensory changes are in the form of zones of anesthesia or paresthesia."

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Evolution of Surgical Treatment of Appendicitis in Sweden. G. Nyström.—p. 1.
*Sex in the Morbidity and Mortality of Appendicitis. Id.—p. 33.
*The Position of the Side Walls of the Human Orbit at Different Ages. J. W. Nordenson.—p. 45.
*Operative Case of Double Metapneumonic Empyema with Recovery. L. Norrlin.—p. 55.
*Results of Operative Treatment of Gastric and Duodenal Ulcer. O. C. Borchgrevink.—p. 61.

Comparative Morbidity and Mortality of Appendicitis in Men and Women.—Nyström analyzes the hospital cases of appendicitis in Sweden since the beginning of the century, and comments on the approximately equal morbidity in men and in women, and the much higher mortality in the male patients. The only plausible explanation for this seems to be that men are more susceptible than women to purulent peritonitis and other complications. But why this is so is still a mystery, unless we assume a predisposition induced by occupation and mode of life, or a constitutionally inferior resisting power to infections in males.

Position of Side Walls of Orbit at Different Ages.—Nordenson shows how the angle of the side walls of the orbit differs at different ages, and suggests that this may explain the spontaneous correction in time of concomitant convergent strabismus. The child outgrows it by this mechanism.

Bilateral Empyema.—Norrlin aspirated about 150 gm. of pus from each side of the chest of a child of 8 convalescing from influenzal pneumonia. This gave transient relief but the condition grew worse until an opening was made large enough to evacuate a full half liter of pus on the left side and over half as much on the other side. Among 588 cases of empyema of the pleura in the twenty-three hospitals of Sweden, it was bilateral in only 5 and only one of the 5 survived. He cites 117 bilateral cases from the literature; the mortality was 37 per cent. but only 10 per cent. among those given operative treatment in time. It is evident from analysis of the cases that primary thoracotomy gives better results than simple aspiration. But it may be wiser to defer the operation on one side and leave an interval between the two interventions, even when the empyemas are simultaneous. In his own case he did not resect any ribs; simple pleurotomy alone answered every purpose. The child would certainly have succumbed if ample drainage on both sides had not been provided. The aspiration was done with an ordinary syringe without special apparatus, and the interventions were all under procain local anesthesia.

Results of Operative Treatment of Gastric and Duodenal Ulcers.—Borchgrevink reviews the ultimate outcome in 87 operative cases in Bull's service at Christiania from 1902 to 1915, classifying them under various headings and comparing them with similar cases in the experience of other Scandinavian surgeons. Sixty-two pages are devoted to the case histories in detail. In 78 primary operations and 12 reoperations the mortality from peritonitis was 3.3 per cent. He incriminates the Murphy button for the perforation responsible for the fatal peritonitis in one of the 3 fatal cases of this complication. In another the vicious circle could not be broken up. In another case advanced pulmonary lesions explained the fatality, and in the fifth fatal case the man of 56 with hour-glass stomach vomited blood repeatedly and died the fourth day in progressive weakness. Of the 65 patients followed to date, 55.3 per cent. were free from all disturbances and 35.3 per cent. had only insignificant disturbances, but in 9.4 per cent. the condition had not been improved by the operation, and even a second

operation had not remedied the condition. This amounts to 90 per cent. good results and 10 per cent. frankly bad. This latter group included cases of ulcer near the pylorus, ulcers remote from the pylorus, and duodenal ulcers. In the juxtapyloric and duodenal ulcers the outcome was good in all but 8 per cent., the larger proportion of bad results and fatalities being encountered in the hour-glass stomach cases. Simple gastro-enterostomy seemed to give as good results as resection in the juxtapyloric and duodenal ulcer cases. The dread of cancer later is not an argument against it as cancer has been known after resecting operations. The results of gastro-enterostomy with gastric ulcers at a distance from the pylorus are far from equaling those of the other groups.

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The Neisser-Wechsberg Inhibition Phenomenon in Immune Serum. T. Thjøtta.—p. 897. To be cont'd.
*Ataxia. G. H. Monrad-Krohn.—p. 919.
*Filaria Loa in Orbit. S. Holth.—p. 939.
*Pseudo-Ascites. Christen Johannessen.—p. 941.

Ataxia.—This is Monrad-Krohn's graduation thesis. He treats of the three great groups of ataxias, the spinal, the cerebellar and the cerebral, their pathogenesis and treatment. Systematic, minute clinical examination is, he says, the alpha and omega of neurologists, and the only guide to successful treatment. He explains how it is possible to substitute volitional movements, direct from the brain with the aid of vision, for the lost more or less unconscious reflex movements, the loss of which constitutes the ataxia of tabes.

Filaria Loa in the Orbit.—In the case described by Holth, the man had become infested with the filaria several years before but the parasites had probably all died except one. This seemed to live in the left orbit and occasionally could be seen under the conjunctiva. The man then hastened to the ophthalmologist but during the wait in the anteroom the parasite moved on out of sight. The filaria can move at the rate of 1 cm. per minute.

Pseudo-Ascites.—Johannessen gives radiograms of a case which suggested tuberculous peritonitis with ascites but this diagnosis was disproved by the lack of fever and negative tuberculin tests. The area of dulness changed its outline from day to day, and the outline was curved or angular, instead of the even horizontal upper outline of true ascites. Abdominal pains occurred at times but no tender points could be discovered, and there were no symptoms such as would certainly have developed during the three years if there had been a tuberculous basis. There was chronic fermentation diarrhea with anemia and emaciation. The intestines had become stretched and flabby from the profuse catarrhal secretions, the stools sometimes amounting to more than 1 liter, and the girth of the abdomen declined from 61 to 49 cm. after the bowel had been emptied. This never occurs with ascites. Another differential sign was that when the pelvis was raised the fluctuation showed little change, while with ascites the fluid sinks down into remoter crevices in this position. Nothing to suggest stenosis could be found. The chronic catarrhal condition and gas distention had stretched the overloaded intestines. As they sagged they dragged the mesentery down with them until the physical findings resembled those with ascites. The fermentation diarrhea was checked with dietetic and other measures to tone up the system, and as the appetite and general health improved the fluctuation in the abdomen subsided.

Ugeskrift for Læger, Copenhagen

Sept. 18, 1919, **81**, No. 38

*Erythrocyte Count at Different Ages. H. I. Bing.—p. 1483.
*Meningococcus Septicemia. F. Tobiesen.—p. 1489.

The Erythrocyte Count at Different Ages.—Bing's tables show that the average number of red corpuscles in 19 presumably healthy men under 50 was 5.5 millions, the range from 4.2 to 6.1, with a hemoglobin average of 112 per cent. In 41 women the corresponding figures were 4.9; 4 and 5.9, with hemoglobin 105 per cent. In 22 men over 60, the erythrocyte average was 6.1 millions, the range from 4.9 to 9.8, with hemoglobin average of 104 per cent.; and in 21 women of 60, the erythrocyte average was 5.1 million, range from 4.2 to 6.4, with 96 per cent. hemoglobin average. Tests after drinking large amounts of fluid showed a higher erythrocyte count than before. Comparison of the count in blood from the ear, from a vein, from the abdomen and from the finger tip of the same person showed differences up to 1.6 million. The average count is thus 5.5 million for men and 4.5 for women, but the physiologic figure varies within wide limits. The erythrocytes are evidently not evenly distributed through the body. The higher erythrocyte average count in the elderly is not an absolute rule as in some of the younger persons equally high figures were noted, and, in some of the elderly, figures as low as the lowest in the younger subjects.

Meningococcus Infection and Meningitis. — Tobiesen reports what he thinks is a very instructive experience with two cases of meningococcus infection. A girl of 14 developed cerebrospinal meningitis; six days after the first symptoms her classmate showed meningococcus infection, but there were no signs of meningitis. Meningococci were cultivated from the throats of both girls, and both had the typical exanthem. But serotherapy was applied so promptly in the second case—the circumstances then allowing speedy differentiation—that prompt recovery followed before the meningococcus in the blood had had time to induce meningitis. Both the girls were left carriers for some time, showing that the brief febrile meningococcus septicemia is epidemiologically as important as actual meningitis.

Sept. 25, 1919, **81**, No. 39

*Uveoparotid Fever. H. Thomsen.—p. 1517.
*Eclampsia with Uremia. A. Tofte.—p. 1521.

Uveoparotid Fever.—Thomsen remarks that during the ten years since Heerfordt described the first 3 cases of uveoparotid fever, only 15 other cases have been published; 16 of the 18 were in Scandinavian literature; 2 in Germany. This set of symptoms does not seem to have been encountered elsewhere. Thomsen's attention was attracted to it by the case he here describes in a girl of 18. The slow insidious chronic course of the bilateral iridocyclitis and bilateral parotitis was accompanied by unilateral facial paralysis. The latter has been recorded only in 5 of the total 18 cases and in all these there was peripheral paresis. All agree that the disease has nothing to do with mumps or syphilis. Bang in 1918 suggested that the disease had some analogy with pseudoleukemia, while others are inclined to incriminate the tubercle bacillus. In 2 cases on record a complete cure was realized under tuberculin and this occurred also in the case here described. None of the ordinary measures had the slightest effect, while there was a strong focal reaction to the tuberculin test and striking benefit followed systematic tuberculin treatment, progressing speedily to a complete cure. He thinks it is evident therefore that in a certain proportion of these cases tuberculosis is responsible, although as yet tubercle bacilli have never been discovered in any instance. If the tuberculin test proves positive, tuberculin treatment should be given a trial.

Uremia After Eclampsia.—The woman in Tofte's case had had severe pregnancy nephritis at her first pregnancy; then came three normal pregnancies in rapid succession. After an interval of thirteen years the fifth pregnancy was accompanied by severe eclampsia, blood pressure 200, and 15 per thousand albumin in the urine, with much methemoglobin. After vaginal cesarean section there followed anuria, uremia and spasms, but the eclampsia subsided. The woman lay in apathy, and the clonic spasms the fourth day seemed to be due to the uremia, the total amount of urine having been only 158 c.c. in the first three days. The prognosis of such cases of anuria and acute uremia after eclampsia is grave, and decapsulation of the kidneys may be the only means of salvation. This was contemplated in Tofte's case but did not prove necessary, the anuria being overcome by drinking of fluids, repose and a diuretic. He doubts whether the patient would have survived decapsulation of the kidneys. He supplemented the 1,000 to 2,000 c.c. fluid by the mouth with saline infusion of 800 to 1,700 c.c.